Pests
AND THEIR CONTROL
1945
JUNE
VOL. 13 NO. 6
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and Their CONTROL

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COOPERATING WITH NATIONAL PEST CONTROL ASSOCIATION

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EDITORIAL

VE-DAY

TOWERING landmark in world history, VE-Day delivered humanity from a horrible nightmare and brought joy and thanks to the hearts of free men everywhere. It has made also inevitable—inevitable beyond a shadow—the dawn of VJ-Day.

Out of the life-and-death necessities of war, the United Nations have forged an instrument of effective co-operation against the common enemy. And at San Francisco the realization that failure to organize the peace would make meaningless much of the victory in Europe has infused the delegates with a noteworthy if not always uninterrupted spirit of co-operative give-and-take.

If pest control has made an important contribution to victory in Europe, it is making an even more important one to victory in the Pacific. In the post-war world too the war of extermination against aggressor insects and other pests, destructive of man's health and property, will attain an even higher level of accomplishment, thanks not only to more potent weapons but improved techniques of application as well.

Meanwhile,

NOW IT'S OUR TURN

Four thousand men died to plant Old Glory on Iwo Jima. Now it's our turn to show what that Flag means to us! Let's all get back of the 7th War Loan Drive and buy Bonds to speed Victory and make the Peace secure. Americans are giving their lives on fighting fronts the world over . . . we can and MUST lend our dollars!

One-Night Rat Blitz

THE extent to which the one-night rat blitz, held recently in Buffalo under the auspices of the local Junior Chamber of Commerce and Kiwanis Club, adds to public awareness of the importance of rodent control, spreads baits around that might not otherwise have been, and serves a constructive purpose. But that anyone seriously considers it a rodent-control panacea is to be doubted.

For it is the consensus of authorities that nothing more than a symptomatic sort of control can be achieved if it is conducted on a one-night, one-raticide basis, no matter how excellent the raticide. Rather, it must be a continuous process—a process in which are intermingled not only the techniques of baiting, gassing, trapping, shooting and repellents, but adequate garbage disposal, area surveys, essential ratproofing and strict law enforcement as well.

All groups—including the public—should co-ordinate their efforts in such a program, governmental, professional and commercial, and, it is hoped, they will learn to recognize the value of speaking the same language where methods and objectives are concerned.

On the other hand, the one-night blitz does present an opportunity on which the PCO can capitalize (1) by making use of carefully timed newspaper advertisements and displays at his place of business which not only stress his availability for follow-up services but also the mandatory nature of such services if effective control is to be had; (2) by offering his services for ratproofing, with sponsoring organizations emphasizing such as part of the baiting campaign itself.

And finally, somehow, arrangements should be made with the sponsoring organizations to indicate, by way of publicity or otherwise, that buildings already employing the services of a PCO should, as a matter of efficient control and good economy, continue such services, instead of depending on the one-night blitz to supplant the regular maintenance service of the PCO.

Why the Public Is Still Distrustful of the Termite Business

IN a recent bulletin, Paul H. Millar, Chief Inspector of the Arkansas State Plant Board, declares that "while the [termite operators] license law" of that state "has to a large extent eliminated fraudulent and incompetent termite operators, the business is still looked upon by many people as a racket." He contends this is true "because charges are sometimes made which are entirely out of proportion both to the operator's costs and to the benefits received by the customer."

"Such charges," asserts Mr. Millar, "are largely the result of the policy which most operators follow; namely, the basing of prices not on the amount of work and materials but on the size of the house, although size is not necessarily a basic cost factor." For example, he explains, "if the operator's basic price which he applies to all buildings is ten cents per square foot, and the building is thirty by fifty feet, a basic charge of $150.00 is made, with additional charges for such repairs, excavations, etc., as may be necessary. The operator's basic price per square foot remains constant for all buildings, even though the condition of some of the houses may be such that only a few hours' work and a few gallons of inexpensive chemicals are necessary for complete treatment." He concludes, therefore, "because prices, thus arrived at are sometimes entirely out of proportion both to the cost and to the benefits, that many people are still distrustful of the termite business."

City Can't Afford to Get Garbage*

WHAT is more important to the welfare of the city than prompt and efficient collection of garbage?

While citizens in various parts of the city were complaining about the mounting size of uncollected garbage in their back alleys, garbage collectors say the city was laying off its garbage collectors a day each week.

Why was this all-important work being neglected?

The rich city of Memphis with its well-kept golf courses can't afford to collect the garbage of its tax-paying citizens.

Of course, there is money to buy art collections of doubtful value, money for this whim and that but no funds to pay garbage collectors if they have to work overtime to do the job.

The city is infested with rats, flies and mosquitoes.

We are trying to win national honors in a clean-up campaign. We are paying bonds off ahead of time but yes, we have no money for garbage collection today.

What a mess! It stinks—but what is worse than offense to the nose or to the eye, it is the height of folly from the standpoint of something that is more precious than gold—HEALTH.

**Editorial that appeared in the Press Scimitar, Memphis, Tenn., April 13, 1945.*

Four Years College Course Proposal for PCO's

FOR SEVERAL YEARS there has been a very noticeable trend on the part of PC operators to become better acquainted with the fields of entomology and chemistry and methods of treatment. It is also being generally recognized that a broad training and education such as cannot be obtained in the grade and high schools is becoming an increasing necessity, especially if the industry is to develop into a profession.

As everyone realizes, new chemicals and appliances are being developed, most of which will require a more exact knowledge of their specific action. As a matter of fact, the new organic chemicals will not reduce or limit the opportunities of the service operator, but will give him a greater scope of work and increase the demand for service. At the same time these new developments will demand a greater knowledge, much of which can be obtained only in an institution of higher learning.

With these thoughts in mind, Purdue University is giving careful thought to a curriculum especially suited for those who wish a college education which will fit them for commercial pest control. There is in mind a curriculum that, first of all will develop well educated men and women, that will provide an adequate understanding of the broad field of Entomology and a specialized training in the field of "structural" pests, a good understanding of chemistry, and practical experience in pest control. For this latter, it is hoped to secure the services of one who has had successful experience in commercial pest control. In addition to the cultural studies and those just mentioned, there are others which should be of special value to the pest control operator, such as Mechanics, Wood Technology, Toxicology, Newspaper, Magazine and Business Writing, Business and Professional Interview, Labor Problems, Business Law, etc.

The present idea is to maintain the Entomology curriculum about as is at present for the first two years, the last two years to be more specialized.

Like all aggressive and new industries, the time has arrived for all PCO's to take advantage of such a course when the plan is put into effect.

We appreciate this excellent proposal in the interest of our industry. Thanks to Prof. J. J. Davis for bringing into existence such a course that will be so valuable to PCO's especially when one takes into consideration the fast growing and important PCO industry.

Florida Pest Control Operators' Conference

THE FIRST MEETING of The Structural Pest Control Operators of Florida was held at The University of Florida on April 26, 27, and 28. This meeting was sponsored by The Department of Entomology of The College of Agriculture of The University of Florida in Cooperation with The National Pest Control Association. It was well attended.

The meeting opened on Thursday evening, April 26 with an informal get acquainted social hour.

The first general session was held on Thursday morning, April 27. Mr. F. de L. Clements sounded the keynote of the conference in his discussion of "The Objectives of The Florida Pest Control Operators' Conference." This was followed by stimulating talks by Mr. Theodore Oser, President, and Mr. William Buettner, Secretary, of The National Pest Control Association. Dr. John T. Creighton, Head of The Department of Entomology, of The University of Florida gave the first technical discussion which dealt with Insect Structure and Insect Control. This was followed by a laboratory demonstration.

The afternoon session on Thursday brought discussions on the following: Insect Identification by Dr. A. N. Tissot of The Florida Experiment Station; Relationships between The State Board of Health Entomologist and Florida Pest Control Operators by Mr. John A. Mulrennan of The Florida State Board of Health; The Principles of Fumigation by Mr. Roy T. Wilmot of The Florida Experiment Station; and The Control of Rats by Mr. H. J. Spencer, of The U. S. Fish and Wildlife Service.

A delightful dinner was arranged for Pest Control Operators and their guests by Mrs. John T. Creighton. This was held at the Gainesville Woman's Club on Friday evening.

The Saturday morning session included the following talks and demonstrations: The Control of Houseflies, Roaches, and Bedbugs including a discussion of The Uses of DDT by Pest Control Operators by Dr. John T. Creighton; Florida Insecticide Laws and Contemplated Pest Control Operators Legislation by Mr. J. J. Taylor, State Chemist of Florida; and Termites and Their Control by Mr. J. R. Watson of The Florida Experiment Station.

A special organization and business meeting was held at the end of The Saturday morning session. The Pest Control Operators in attendance voted to create a Florida Pest Control Operators Association. The committee on organization presented a constitution which was duly adopted. The committee on nominations presented its recommendations and the following officers were subsequently elected: President, Mr. J. P. Walker, Walker Chemical and Exterminating Company, Orlando; Vice-president, Mr. F. de L. Clements, S.P.&M. Service, Fort Lauderdale; Secretary-Treasurer, Mr. Walter A. Helms, Orkin Exterminating Company, Jacksonville, Florida; Members of The Board of Directors, Mr. David R. Barnhart, D. R. Barnhart Co., Daytona Beach; Mr. J. M. Roper, Pan American Exterminating Company, Miami, and Mr. W. G. Waldron, Waldron Exterminating Service, Sabastian. The newly elected officers were formally presented to the membership and President Walker took over the presiding officer's gavel.

The first action of the newly created association was the appointment of a legislative committee. Dr. John T. Creighton of The University of Florida was elected to honorary membership and presented a complimentary War Bond for his efforts on behalf of The Florida Pest Control Operators.

The first meeting of The Florida Pest Control Association was adjourned by president Walker at twelve o'clock noon, Saturday, April 28.

The Entomologists' Joke-Book

There are so many new faces in our membership that we felt it timely to refer to the fact that there may still be procured copies of this splendid book of humorous writings and comments . . . unwittingly written . . . of an otherwise highly important science. The preparation of this book was done by Professor J. J. Davis, who has carefully compiled and selected much interesting material. This book may be purchased for $1.00 plus 10 cents in stamps to cover mailing postage. No PCO should be without this book in his library. Also order now before you forget—very simple to enclose a $1.00 bill and 10c in stamps.

This will make an excellent gift to PCO's in service and others.

ORDER THROUGH PESTS, 1200 OAK, KANSAS CITY 6, MO.

WHY A PCO CONFERENCE

CHARLES POMERANTZ
Bell Exterminating Company, New York, N. Y.

Editor's Note: The following paper was delivered by Mr. Pomerantz at the Canadian Pest Control Operators' Conference, Montreal, Canada, February 22, 1945.

I. **An Honorable Profession or a Job to Be Ashamed Of?**

II. **WHAT PCO Conferences Have Done for Me.**

III. **What PCO Conferences Can Do for Every Member of Our Industry . . . If Each and Every Member Only Wants to Attend.**

IV. **Conclusions.**

An Honorable Profession Or a Job to Be Ashamed Of

IN HIS FAMOUS BOOK on American slang, the well-known scholar, H. L. Mencken reports that after World War I, many Americans became ashamed of their professions. To overcome this sense of shame, he says, they changed and prettied up the names of the jobs they did. Janitors became "Building Superintendents," window dressers became "Interior Decorators." As one of his most humorous illustrations, he says the old-fashioned rat-catchers began to call themselves "Exterminating Engineers."

Well, it is a tendency common to us all to want to better ourselves. This is a tendency worth encouraging. But after the old rat-catchers of our profession had changed their name, it didn't follow that the profession as such had improved any. By the time I got into this business in 1936, nothing much had changed or improved in it for a number of years.

I came from the Women's Wear world straight into exterminating at a low point of the depression. However, I felt I needed the change—the sense of usefulness was lacking in my former work. There I did not feel any urge for enlarging my field of vision. Because I didn't have that incentive in the Women's Wear business, I really wasn't too successful in that trade. In fact, that's putting it mildly. I was terrible at it.

But in the new job, I felt that I would have the chance to get my hand into a real problem. I became happy about the possibilities.

There was spring in the air. A new resolve and hope seemed to pervade the air and my heart was full of expectancy. It was like the first flush of fancy, until I settled down and then the contrast between my past work with the present seemed to present itself in an ugly fashion. Rats, mice, roaches, bedbugs, waterbugs! —and I had been used to dealing with the famous designers, Paquin, Paul Poiret and beautiful models. Wasn't it only yesterday that I found pleasure in the glorious pages of Kreutzer's Studies, Kreisler's Praeludium Und Allegro, in the first movement of Mendelssohn's Concerto? This conflict became real—it threatened to becloud the real basic values of my new work and livelihood. This battle with myself became more intense when my first days were spent on some leaflets supplied to me by the Department of Agriculture on bedbugs, roaches and rats. It became a battle royal between Emerson, Byron, and Keats on the one hand and the literature of these insects on the other.

William Shakespeare also came into the fight and like the "seconds" in the fight-ring, seemed to shower me with "a rose by any other name will smell just as sweet." I asked myself "Would an exterminator by any other name smell just as sweet?" And I started wondering if I was in an honorable profession or in a job about which I would be ashamed.

The fight was on; it was an appalling experience I was going through; my morale seemed shaky; I needed a lift, a great one, to overcome what seemed to be the ugliness of it all. I began to doubt the wisdom of entering this new field. I was reluctant to tell anyone about my new work because the reaction usually brought forth, "Oh, another bug chaser," and "Oh, what a racket!" My mind was in a chaotic state; I felt a great struggle within. I groped in the dark hoping to stumble upon someone who would give encouragement and point out to me that this is an important field of endeavor. I looked in vain, so it seemed, for someone to say to me, "Do they not dig for diamonds and gold in dirt and mud?"

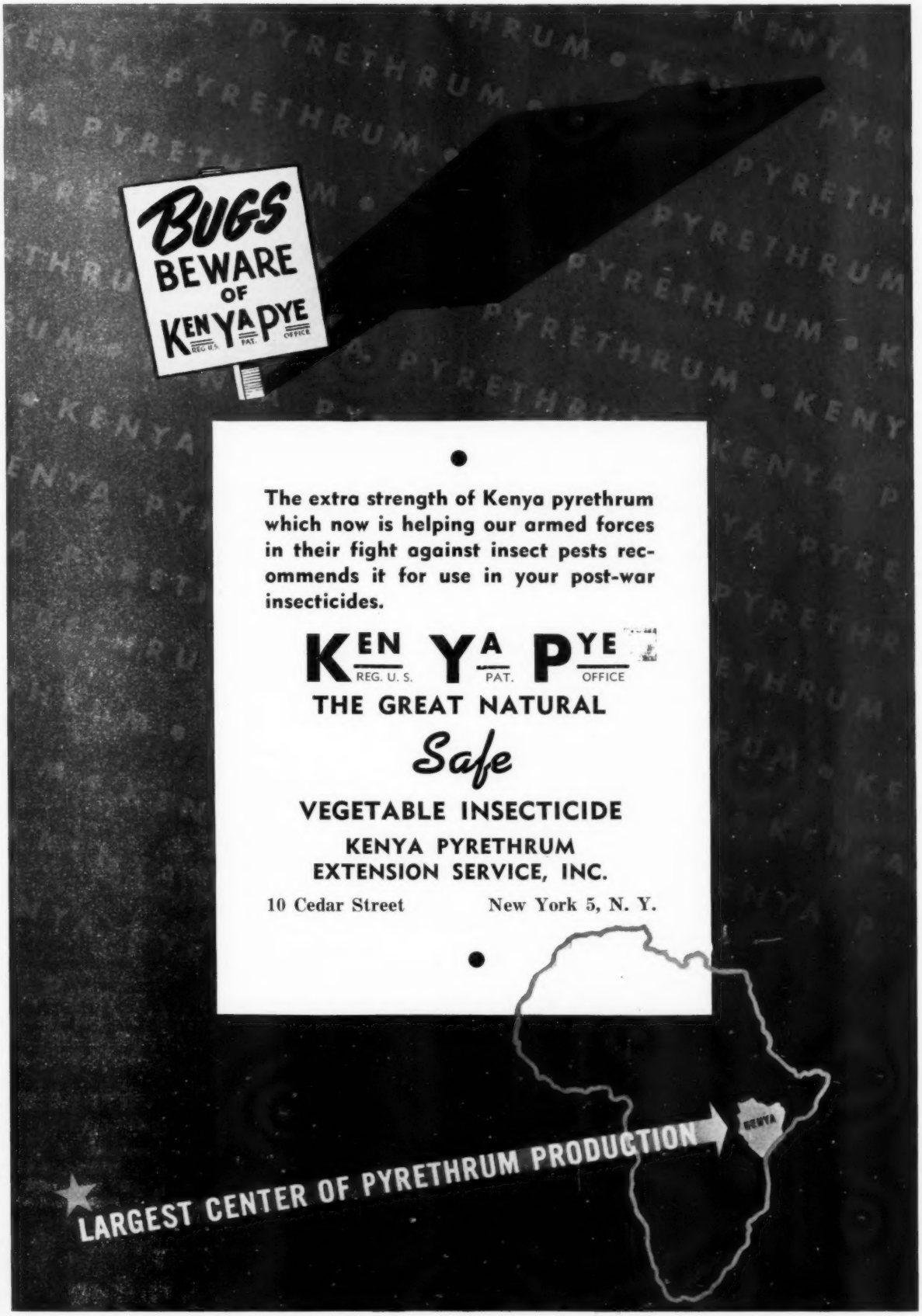
By analogy, was not the field of insect and rat extermination an outstanding service as a second line in defense of public health? What could be more useful than to destroy vermin which brought misery to human kind and causes damage to many useful commodities? These and many other questions popped up.

I worked hard to study and to learn more about these unwanted "guests" in our homes that I might more intelligently discuss insect and rodent problems with my prospective clients. I sensed and detected that real estate management, property owners, and maintenance personnel expected precise information about vermin. They asked questions about the life and habits of these pests; about the various poisons and insecticides and other substances used; about the action of the chemicals, toxicity, and antidotes; and other apparent questions relating to results to be expected. Like thunder there seemed to be rumblings of an awakening public. There was skepticism in some remarks; intolerance about our methods were expressed. John Q. Public seemed to ask questions which called for studied and intelligent replies. I felt I needed a background that I lacked. Where was I to get it? I began for once to see something being unveiled before me, the need for specific knowledge and information. The people I called upon wanted facts which I would be expected to substantiate. I asked myself when I left a new client, "Was my answer good enough; was that an intelligent reply I gave to that question; was it scientifically correct; did I make a good impression; will my mental effort be a match for my foot work?"

In the light of this new experience, I began to sense that I possessed inadequate knowledge and couldn't satisfy the many demands made upon me by my clientele. I came to the conclusion that the foundation of my new life work was weak and that in time it might have a disastrous effect upon the financial welfare of my business, unless I found a way to obtain factual knowledge based on research and tested experiences.

I began to feel like a warrior—a crusader. I made up my mind that I must find a way to gain such knowledge and scientific background if I was to get ahead and build my work on a solid foundation. The answer came. My seemingly elusive quest appeared to be answered. In the mail one morning I received a notice from the office of the "National Pest Control Association" that a conference consisting of a series of lectures was to be held at Massachusetts State College, Amherst, Mass., right at my door step. It was an invitation. Here I could perhaps learn something relative to my new field. The notice was signed by one William O. Buettner. I called him that same morning. I introduced myself. I asked about registration and if there were any entrance requirements. To my skepticism and delight came the answer in quick sharp fashion—words with a sense of high seriousness and evangelical zeal—"the only requirements are your earnestness and desire to learn and to improve your standing in your community and bring honor and appreciation to our profession."

Here was the "salt" I craved—here were words from the heart. I jumped at this opportunity. This unquenchable desire for knowledge might now be satisfied and I dreamed of the respect I would have for myself and progress my firm would make. I was to sit in a college class room and listen to the dissertations of Dr. This and Prof. That. It was impossible for me to believe that I had actually bought my railroad ticket to attend "college." How thrilled I was; days and nights seemed unusually long and, at times, time itself seemed slow in passing, and Amherst seemed to me in the unimaginable distance. I talked of nothing else. I was anxious to get started. I told a friend I was going to Massachusetts State College for a three days' conference and that the college faculty would speak about things relative to our industry. He said nothing, but looked sideways at me with raised eyebrows and remarked, "an exterminator—to a college, that's one on me." Even to my young daughter I was no more an exterminator, but an entomologist. If to the mind of a child, I suddenly become an entomologist, how would my customers react as they recognized my ability to answer their questions and analyze intelligently insect and rodent problems? Will the secretary at my office have a greater regard and respect for her job? These were among the questions I was asking myself. At the same time I wondered what our employee operators would say when they realized that colleges such as Massachusetts State were opening their doors to us—to teach us—to replace the "hit or miss" and "trial and error" methods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with the tested and scientific procedures and thus dispel ignorance about our industry. The opportunity of exchanging knowledge and experiences with our fellow workers in the vineyard held out great promise.

The thought of this coming new experience was compelling—inspiring.

What PCO Conferences Have Done For Me

Finally I took my seat in the classroom.

Please do not ask me to give you something specific of what I learned. Don't ask me to give you something in weight or form upon a platter and say, "This is what I gained."

The musician does not appear in the street with notes dripping from his fingers, yet you hear his music; the writer does not ooze out the alphabet but his words are words of wisdom, knowledge and understanding. His pen is the only weapon—his former classroom and home studies are his ammunition. Chemists, doctors, and teachers do not walk around with signs on their backs advertising their profession or years of completed study, yet they achieve the results expected of them, and are highly respected in their community.

What specific things, then, you might ask, have the conferences and short courses at Massachusetts State College, Rutgers University, and the University of Montreal done for me? This is what they have given me:—

DIGNITY:

The conferences have given me a new sense of dignity.

There's no weight or time measure of this intangible human element, but dignity is very real in one's bearing and in the respect it inspires. I have earned the respect and high regard of my clients. I do not leave the impression that I am a "rat-catcher", a "bug-chaser," or that I am engaged in "a racket." I sense the recognition that I am a necessary and essential factor in our every day scheme of things. I preach sanitation—I represent Health. I have turned insult to influence—a dignity that knows no defeats.

That's what the Conferences have done for me!

KNOWLEDGE:

The Conferences have given me vital knowledge.

With the knowledge I gain at each conference I am able to face my problems without hesitancy and fear. Every problem is a challenge. It is my "two years of pre-med." It is my "master's degree" before I can pursue some new and comparatively unknown fields of pest control. From this cumulative knowledge, I gather confidence and inspiration. With this added knowledge, I become alert to the opportunities and responsibilities of the future.

That's what the Conferences have done for me!

SCIENTIFIC BACKGROUND:

The Conferences have given me an invaluable scientific background.

My interpretation of the literature on the life cycles of insects and animals the better to exterminate and control them takes on new meaning. I do not grope in the dark in fear of unsatisfactory results. I approach difficult problems that are ever present in our daily work with the quiet and calm confidence of a veteran. My diagnoses are supported by the cumulative information I gained at these meetings.

That's what the Conferences have done for me!

FRIENDSHIPS:

The Conferences have opened for me a new road to friendships.

I find a great source of strength in the friendship of the teachers and fellow workers of the different states. The staff is intellectually stimulating; they inspire eagerness and optimism. When I am amongst them, I am not "amid the alien corn." They are my friends, my reservoir in time of need when I search for the answer to a stubborn and perplexing problem.

That's what the Conferences have done for me!

ETHICS:

The Conferences have given me a new sense of ethical values.

These Conferences have taught me to pursue truth for truth's sake and not how to beat my fellow competitors. Slick and shady talk is unnecessary to gain any job. I seem to hear the clarion call of the Conferences cry out the old Latin proverb—"Amicus Plato, sed magis amica veritas"—"Plato is my friend, but the truth is still more a friend to me."

That's what the Conferences have done for me!

IDENTIFICATION OF INSECTS:

The Conferences have given me a basic understanding in the identification of insects.

I am able to identify insects and in many cases give my client an immediate answer. I could not do this before attending these Conferences. This new ability enhances confidence in me by my clients.

That's what the Conferences have done for me!

FORMULAS:

These Conferences have given me money-making and time-saving formulas.

My firm has not retained any formula used previously to my attending the Eastern PCO Conference. Each and every formula regardless of the use of such toxics as zinc phosphids, arsenic, thallium, strychnine, red squill, etc. or regardless of extermination and control of silverfish, beetle, ant, tick, termite, moth, roach, bedbug, etc. have been improved. These new formulations have been tried, used and proven to give far more efficient results and naturally profitable results. I wish to ask you, "Where but at these Conferences could we find so rich a source and interchange of control methods and entomological information?" I can't emphasize enough the good that all this has brought to the general progress of my firm. We have saved several hundred dollars during these years.

That's what the Conferences have done for me!

RESEARCH:

These Conferences have opened before me new and unknown wonders in the field of research.

They have created a deep rooted desire for research in insect life and the problems related to insect and rodent control. It has become a hobby with me. It is an outlet for my desire ever to search for the new, to chart unknown paths upon the high seas of insect lore and to try with almost boyish enthusiasm, new chemicals, new combinations. My tick and termite research work especially is my "piece de resistance" and desire to reach heights, where man hath ne'er set foot.

That's what the Conferences have done for me!

GOVERNMENT PERSONNEL:

Entomologists, Biologists, and Public Health Officials:

The previous remarks have already reflected the tremendous role played by entomologists, biologists, health officials and others. The accomplishments of these men, of whom praises frequently are unsung and unnoticed, cannot be overlooked. Essentially these men possess an extraordinary sense of public duty and from their laboratories, research work and public services are derived many benefits by the PCO in insect and rodent control services. Their papers and participation at the Conferences might be summarized as personnel having the power to steer and stir interest and efforts by the PCO to adequately meet the constant war against insect and rodent pests. A better understanding follows in recognizing insect vectors of diseases and rat-borne diseases as well as analyzing damage and destruction of vital foods and critical commodities. Rubbing elbows and otherwise discussing mutual problems accrue to the benefit of my business in particular, and our service in general becomes respected as an essential activity.

To this governmental personnel go our thanks.

That's what the Conferences have done for me!

Conclusions:

These Conferences have brought me unexpected and profitable results.

I attain better results for my customers and associate more enjoyably with my fellow workers. The background of facts that I gather at these Conferences has given me the ability to find the appropriate solution to important problems of control. Our Termite, Tick, and Rodent Control have improved. We now make money at these jobs and produce satisfactory results for our clients. The pooling of information freely discussed at these conferences has strengthened the fund of knowledge for efficient work.

I have become familiar with many insects and their habits, as well as the life cycle, the chemistry of many insecticides and raticides in regard to use and results to expect under different conditions. My work is inspired by the very thought of having been in a classroom. I feel a fresh breath of life when I tackle a new or stubborn problem in man's ever increasing fight against the ravages of insect pests. Did I hear some one say,

You'll be interested in these reports from health officers all over the world telling their experiences in combatting the rat menace!

From South America, Africa, England, India, China, the East Indies and Canada, as well as the United States, come factual, interesting reports of the effectiveness of CYANOGAS* (calcium cyanide) for destroying both rats and fleas by fumigation! There's also information on the procedure and use of CYANOGAS in modern fumigation which can help you with your own work in rat and other rodent pest control. Write today for your copy of "World-Wide Approval of Calcium Cyanide for Rat Control." *Reg. U. S. Pat. Off.*

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"That is yet not enough?" I forget that we are living in a materialistic world, so friends, I shall let you in on a secret and you may spread it high and wide. Up to the time I attended these Conferences, I hit the dust to make a living, but from my experiences beginning with the first Conference, I somehow was able to gather the courage and wisdom to ask better prices and we have been able to show a profit ever since.

That's what the Conferences have done for me!

What Pest Control Operators' Conferences Can Do For Every Member of Our Industry

This is also what Conferences can do for every member of our industry if each and every member only makes up his mind to attend.

They will bring increased respect and public confidence to our profession.

They will give you a far broader background of knowledge of your work.

They will take you out of the "hit or miss" era and keep you abreast of the latest scientific methods in this rapidly growing branch of science.

They will bring you the respect and admiration of your clients and fellow men.

They will lift you toward professional status of one engaged in a calling which makes men's lives cleaner and happier.

They will make you feel that you have a real function in the community in the performance of invaluable service directly of benefit to human kind.

Last but not least, they will bring you greater and more richly deserved financial reward.

These Conferences will influence your whole life as they have done mine, with a greater pleasure in our work and to economic betterment.

WHAT MORE CAN ANY MAN ASK DURING HIS SOJOURN ON EARTH?

DDT WITHIN BOUNDS

By **DR. ALVIN J. COX**
Chief, Bureau of Chemistry
State of California Department of Agriculture

THE SPECTACULAR insecticidal effects of DDT have captivated the imagination of the public so that it has been thought of as an entomological panacea with fantastically supernatural properties against all annoying household insects and all agricultural pests. We need more balanced summaries of correct information to counter with conservatism the misinformation that has been offered the public whose enthusiasm may have misled it to expect too much of this insecticide.

Discovery and Development

The letters DDT are a convenient nickname for the contracted chemical term, dichloro-diphenyl-trichloroethane, but this general term may mean any one of 27 possible compounds. The product is more properly designated chemically as 2,2-bis-(parachlorophenyl)-1,1,1-trichloroethane. It was prepared more than 70 years ago by a student working on his doctor's thesis in Alsace as a routine preparation in an abstract academic study, but it was not then suspected to have value and was not produced on a commercial scale.

Pyrethrum has long been known as "Insect powder", and an extract of it was formerly the principal intensifying agent in flysprays. There was an attempt to meet the wartime pyrethrum shortage in this country by conserving the supplies on hand, but there came a time when pyrethrum stocks were barely adequate for the armed forces and an alternate material had to be found for the diminishing supplies of pyrethrum and rotenone. For many years investigations have been under way for development of satisfactory alternates for these materials. This development work was intensified when supplies were disrupted by war, and many hundreds of products were tried in advance of DDT.

The ability of DDT to kill certain insects was observed in Switzerland a few years ago, and on October 16, 1942, the U. S. Department of Agriculture began investigations for control of plant pests with an imported sample of the product. Information was next received from Switzerland that the material was effective for control of body lice and preliminary results were so promising that the office of the U. S. Surgeon General and of Plant Research and Development arranged for manufacture of the chemical in this country. The whole subject was blanketed in military secrecy. Pilot plant production started in May 1943 and soon thereafter considerable information was made public.

The insecticides containing DDT developed for use of the armed services have proved to be outstandingly effective in controlling mosquitoes and lice. It has been said that the greatest medical entomological advance during the war is the DDT louse powder. Intensive delousing operations carried on with this powder in Italy prevented a typhus fever epidemic. There are about 17 manufacturers of DDT who are producing a total of 2,000,000 pounds a month, and at present the entire output is reserved for use of the armed forces whose needs are not yet satisfied for control of disease-carrying insects, such as body lice and mosquitoes.

Chemistry of DDT

DDT is quite simply synthesized from monochlorobenzene and chloral hydrate which has been used for years as a sedative. In the pre-prohibition saloon era chloral hydrate was known as knockout-drops and used especially in a drink to rid obstreperous characters. Purification of crude DDT is a difficult process because of the close chemical relationships between DDT and its two isomers normally present in the crude material. DDT is believed to have more insecticidal value than any of the products from which it is derived, its isomers, or its decomposition products.

The propensity of DDT to split off hydrochloric acid is enhanced by presence of ferric oxide, and iron and aluminum chlorides. It is also known that Fuller's earth and some similar products show catalytic activity which is probably due to presence of small amounts of iron compounds. Since the first decomposition product of DDT results from splitting off of hydrochloric acid it may be suggested that toxicity is possibly due to this decomposition of absorbed material. Data have been placed in my hands that indicate more rapid decomposition of the common crude DDT than the recrystallized under identical conditions. Data on loss of hydrochloric acid from the oily isomer conform quite closely with those for the recrystallized product. More work should be done on the rate of decomposition as a possible basis of comparison. Also more information is needed on those rays of the sun, largely absent in winter months, proficient in breaking down DDT. The decomposition products thus far tested have had less insecticidal effectiveness than the primary material. The mechanism of destruction by many insecticides in successful use has not been determined. DDT is a stomach poison as well as a contact poison and in either case affects the nervous system, and progressive paralysis and death of the insect follow.

DDT is a nearly colorless and odorless crystalline substance insoluble in water, and is a fairly stable compound under most circumstances. The technical grade may be sticky or oily or waxy, and colored light tan to brown. Knowledge of the variability of the product from different manufacturers and of different batches from the same factory are highly important. Some technical grades of DDT are capable of application in their original state against certain household pests unaffected by low percentage dusts, but other commercial products are of an oily or lumpy nature and must be incorporated in a suitable diluent to make proper application. It is believed that under similar conditions a given quantity of DDT will kill, for example, a cockroach regardless of whether or not it is mixed with a diluent.

Solubility of a material in various solvents is fundamental information, and some approximate solubilities of DDT expressed in grams per 100 grams of solvent at room temperature are as follows:

WHY POST-WAR PYROCIDES WILL DO A BETTER JOB

When the Government decided to use all the available supplies of pyrethrum in Aerosol Bombs for malaria control, industry was faced with some new problems. Among them was the problem of producing on a commercial scale a pyrethrum extract free from the resins and waxes that occur naturally in pyrethrum flowers.

Extracts were then available which were about 90% soluble in liquid "Freon" which is used in Aerosol Bombs, but none was entirely satisfactory. The first efforts toward improvement produced extracts which were about 96% soluble, but even greater purity was necessary. Study of the problem by McLaughlin Gormley King Company scientists resulted in an extract, "Pyrocide 160," so pure that 99.25% to 99.50% is soluble in "Freon." With "Pyrocide 160" as a standard, it became possible for the Services to demand that the whole industry produce better extracts. For example, U. S. Navy specifications now permit only extracts which are 98.5% soluble.

Just as "Pyrocide 160" now leads the field and is the preferred pyrethrum extract for war use, we believe "The Pyrocides" will set the standards for the industry in the post-war period. The new process for making "Pyrocide" free from impurities will also make these *purer, better* pyrethrum products for your *post-war* use:

PYROCIDE 20—The original, standardized, concentrated clarified pyrethrum extract, but purer, and freer from color, odor, and irritating impurities.

PYROCIDE 40—Twice as strong as PYROCIDE 20, and better adapted than ever before to making livestock sprays and agricultural dusts and sprays.

PYROCIDE 160—the Aerosol Bomb extract which is truly called "the purest form of pyrethrins commercially available." Eight times as strong as PYROCIDE 20, PYROCIDE 160 is 99.25% to 99.5% soluble in "Freon." When you pack Aerosol Bombs for your customers after the war, the superior purity of PYROCIDE 160 will give you fewer packing problems and better Bombs to sell.

DRY PYROCIDE—The original stabilized solid pyrethrum concentrate for making horticultural dusts. The new process makes it easier to mix with diluents, and the resulting dust flows more freely—will do an even better job.

At present, pyrethrum is restricted to use by the Armed Forces. When we can offer you pyrethrum again, you will like these better products.

McLAUGHLIN GORMLEY KING CO., Minneapolis, Minn.

PYROCIDE 160

★ ★ ★

	DDT as % of solvent weight
Benzene	106
Cyclohexanone	100
Chloroform	96
Ethyl acetate	68
Tetrachloroethane	56
Tetrahydronaphthalene	52
Pyridine	51
Carbon disulphide	48
Toluene	48
Dioxane	46
Diethyl ether	45
Acetone (dimethyl ketone)	40
Carbon tetrachloride	25
Cottonseed oil (Sp. gr. 0.918)	20
Kerosene	11
Cyclohexanol	8
Normal butyl alcohol	8
Iso-amyl alcohol	7
Petroleum ether (b.p. 40-60° C.)	6
Iso-propyl alcohol (90-91%)	5
Methyl alcohol	5
Spray oil	5
Ethyl alcohol, absolute	4
Tertiary butyl alcohol	4
Ethyl alcohol, 95%	2

Because of its chemical structure, DDT tends to decompose in the presence of alkali; it should be in a neutral or slightly acidic medium for greatest stability. Advantage is taken of this type of decomposition in the F. A. Gunther method of analysis, which involves dehydrohalogenation of DDT in alcoholic potash and determination of the freed chloride ion. U. S. Department of Agriculture chemists have developed a method in which the sample to be analyzed is volatilized and burned in a flame of ordinary illuminating gas, enabling the free chlorine ion to be titrated in the absorbed products of decomposition. Several other methods in use have been published in current periodicals. Some workers are developing a colorimetric test which, if sufficiently sensitive and specific, should be of value in determining small quantities such as found in spray residues and animal viscera.

Pests Controlled

DDT increases toxicity of oil sprays to adult California citrus red scale on citrus only slightly, but under laboratory conditions it has exhibited residual effectiveness against crawlers which do not get past the whitecap stage. DDT is not as effective against citrus thrips as was tartar emetic at the outset. It is better than nicotine in some cases and not so good in others. When properly used it is advantageous for control of certain storage pests which infest grains, processed cereals, and other foodstuffs, namely, red flour beetle and rice weevil, but DDT is a poison and must be used with great care around foodstuffs. A mortality of almost 100% on eggs of greenhouse thrips has been reported indicating an ovicidal effect of DDT for the first time. Under some conditions where DDT is used, red spiders become a more serious pest, as subsequently discussed under the heading "Effect on beneficial insects".

DDT dusts and sprays appear effective against the Oriental fruit moth. As a spray in field applications, after 24 hours it was reported 95% effective in preventing larvae from entering shoots, and after 10 days it was still 65% effective. Dusts applied with spray-duster equipment are encouraging, presumably because the deposits are resistant to weathering and mechanical losses. Unfortunately DDT is more toxic to the beneficial **Macrocentrus ancylivorus** than to the Oriental fruit moth.

DDT is reported effective against the following plant pests: bean leaf roller, cabbage looper, tomato pinworm larvae, imported cabbage worm, melon worm, pickleworm, European corn borer, tomato fruitworm or cotton bollworm, cankerworm, diamond back moth, codling moth, blister beetle, Colorado potato beetle, Japanese beetle which does not occur in California, cowpea weevil, pepper weevil, garden flea hopper, almost all leafhoppers, Harlequin cabbage bug, eggplant lace bug, lygus bug, onion thrips, thrips on cotton, and others as indicated in the Journal of Economic Entomology and elsewhere. In several reported cases use of DDT sprays reduced codling moth injuries on apples to less than 1%. It is somewhat effective in grasshopper baits and as a dust. Crickets are said to be more susceptible than the grasshoppers. With proper timing and adjustment DDT in an emulsive oil may prove to be as effective as measures now used for control of parlatoria scale and similar pests.

A story that seemed unbelievable was that the rafters of a barn had been sprayed with a preparation containing DDT and four months after that time every fly that settled on the rafters fell off dead before morning. A 16-inch cubical fly cage was made of window screen with a wooden bottom. When removed from the bottom, the interior was sprayed with DDT 2% in odorless kerosene oil, and with no other treatment batches of 500 flies were released into the cage from time to time with the following results:

Days after spraying cage	Minutes before 100% knockdown, and death of flies
2	22
7	35
30	61
64	99
205	310

The cage was not in sunlight nor was the ventilation good, but the results show that 2 or 3 adequate sprayings with DDT in barns will give control during the season. DDT 2% in diesel oil sprayed on hogs afforded control of lice, and 5% in oil gave 100% kill and six months control against chicken lice in chicken houses. This persistence of DDT could ruin an important experiment if one failed adequately to clean a Peet Grady Chamber or other equipment. By more complete washing, residue of DDT insecticides may be removed from such test equipment with the acetone solution now routine in removing residual traces of organic thiocyanate, rotenone, or pyrethrins fly sprays.

There are many factors to evaluation of an insecticide. For example, creosote probably will kill everything that DDT will kill, but after all creosote has only limited and specific agricultural use, because it cannot meet all other requirements of an insecticide for general usage. Some current information may be misleading as the available data are of a laboratory nature and too meager to establish the degree of control it may provide in the field. One frequently may get misleading information from relying wholly on toxicity tests. Termites have been killed by DDT in cage tests, but commercial application is a different thing. If wireworms and over-wintering pear thrips are killed by DDT, then experimentation for control must involve the definite knowledge that the amount to be used will not injure the soil, poison livestock or do other serious damage.

DDT insecticides may find commercial utilization in certain fields of civilian household pest control sooner than in agriculture, but it must be placed with the thoroughness accorded other application of insecticide to obtain effective results. It makes no difference what one uses if he misses the bug. DDT insecticides appear to be effective against a long list of household and similar pests of human beings and other animals. Proper formulation and incorporation of DDT into a dusting mixture or into an oil preparation will provide an economic poison of merit for control of clothes moths, bedbugs, fleas, lice, ticks on dogs and vegetation, chiggers on vegetation, and spinose ear ticks. A single application of DDT 5% flea powder should suffice for a few weeks, but it would appear there is a possibility of poisoning animals, such as cats, which have a habit of licking their fur. DDT is effective as a paint against flies and some other pests that walk upon it for they seem to absorb it through the padilla (padded feet). It serves by means of paste in bait against silverfish where its use is practicable. In spite of the large amount of work done the most effective results have been for control of body lice and of mosquitoes which are especially sensitive to DDT. One part DDT in 100 million parts of water will kill mosquito larvae, while one part in 10 million apparently does not affect fish. It is exceptionally effective in abatement of breeding places for mosquitoes and some other insects parasitic on human beings. It is useful in control of cockroaches and crickets. DDT is said not to be less effective in control of the German cockroach than the American speies. Preliminary results with carpet beetles are favorable. Results with regard to its effect against ants are conflicting. A 5% solution has been reported as effective against carpenter ants. Each various DDT insecticide and its method of application should be investigated to determine the most effective control for each type of pest.

Pests Not Controlled

DDT is effective against a wide range of insect pests, yet because of its selectivity there are some important insect pests against which it appears ineffective. It appears to be of no practical value for control of boll weevil, pea weevil, Mexican bean beetle, plum curoulio, cotton leafworm, and cotton aphid. DDT insecticidal dusts appear to be of little efficacy against Mediterranean fig scale or on parlatoria scale on olives. It is not effective in bran against snails. On the whole DDT has shown no encouragement in control of citrus bud mite and citrus red mite. With all this, a drawback may be that it is not quite selective enough. In general, DDT is not of great value for control of aphids, although it is of some limited value for control of turnip aphid and thrips on gladiolus.

Hazards to Human Beings

Of double concern is the pharmacology of a product because

this not only is a factor determining its eligibility for legal sale, but also its spray or dust residue hazard under the spray residue law administered with regard to all economic poisons. One must reckon with any hazardousness of a material on foodstuffs to be consumed by man and other animals. Under certain circumstances DDT may be harmful to human beings and until full information is available it should not be used on commodities to be eaten. It would appear that there should be no objection to reputable experimental and pilot development usage on trees from which the fruits would be sent to a cannery where any spray residue hazard is eliminated by peeling and coring.

If used in agriculture, there is reason to indicate that removal by adequate alkaline washes of DDT residue from fruits and certain vegetables to meet a reasonable tolerance is commercially feasible in the regular packing house operation with existing machinery. A tolerance of DDT, 10 parts per million on apples would be reasonable, but a tolerance of 0.1 part per million on leafy vegetables would undoubtedly mean that the vegetable grower should not try to use it for pest control except on seed crops. The orderly thing to do is for interested persons to request the U. S. Food and Drug Administration to set up a tolerance under Sec. 406(a) of the Federal Food, Drug, and Cosmetic Act.

The insolubility of DDT in water, and therefore the low absorbability of DDT dust through skin, enabled it to be used on the millions of soldiers and sailors of our armed forces without deleterious effects. Ingestion of similar doses would be toxic, and DDT should not be used where there is possibility of contaminating food. Use in a home of clothesmoth spray of comparatively moderate concentration is likely to present little hazard, but protection should be provided in case of exposure to frequent applications or too heavy spray, which may cause skin irritation. In dealing with poison it is necessary to consider not only its lethal nature, but also the ease with which it is absorbed. In fact excessive contact with some solvents alone may cause skin irritation. There has been a report that microscopically fine particles may be absorbed directly into the blood stream, but this would seem to require substantiation.

A definite sharp line should be drawn between (1) DDT in dusts or as suspensions in water, and (2) dissolved DDT. DDT dissolved in vegetable oil or in animal oil appears to be dangerously absorbable, and therefore such mixtures must not be swallowed or applied to the skin. DDT is undoubtedly absorbed far more readily

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PARA-DICHLOROBENZENE

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Kills moth larvae and also deodorizes as it prevents moth damage.

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District Representatives in Principal Cities

from such a medium than from petroleum oil when taken by mouth because petroleum oil is not digestible. Before cautions were known, an instance was reported when flies annoyed on a hot day and a man applied about 10 cc of a 5% solution of DDT in petroleum oil to the skin of his back, chest and arms which he reports resulted in DDT poisoning from which he recovered. A statement of this nature requires substantiation, and also differentiation would need be made as to the effect of the solvent alone.

In order to reiterate with emphasis that which was narrated in my annual reports prior to the advent of DDT, I refer to a statement written about two years ago which appears on page 133 of my paper entitled: "Economic Poisons: California Law and Its Administration", and reads: "The rapid increase in the use of synthetic organic chemicals illustrates the need for study to provide data for intelligent handling of products of this nature. . . . When a chemical is not acutely poisonous, generally little is known as to the extent of its injuriousness." Knowledge of the pharmacology and toxicity of DDT should keep abreast of its insecticidal effectiveness and contemplated use.

Toxicity to Animals

At our request, Dr. Clinton H. Thienes, of the University of Southern California, carried on a diet test with white rats, using DDT. Beginning January 10, 1944, the rats were kept on a diet containing one part DDT incorporated dry into 10,000 parts foodstuff (100 ppm.) Two months later, they began to have convulsions, and two days after this half of the rats were restored to normal food with near disappearance of convulsions. However, both the withdrawn rats and those remaining on the DDT diet died within a further three days. This experiment indicates that the poisonous effect of DDT is pathologically cumulative.

About sixty miles from San Diego, in May 1944, the United States Bureau of Entomology and Plant Quarantine fenced three-quarters of an acre of common, wild, low-growing grass and containing grasshopper egg masses. When the grasshoppers were emerging, the area was uniformly dusted at the rate of 20 pounds per acre with a dust containing DDT 10 per cent. We wanted to determine any hazard of using DDT in pastures, and 48 hours after dusting, our Bureau of Chemistry was permitted to put three ewe sheep in the field. After seventy-two hours, they showed definite neurologic symptoms. They reminded me of dogs suffering from rabies, which is a brain disease. A rabid dog changes his habits. The cross dog becomes friendly, and vice versa; for example, there came to my attention in the Philippines a case where four American children in one family were bitten by their pet dog, which had contracted rabies. Nervous disorder in the sheep was characterized by tremors and especially by motion in the hind legs similar to string-halt in horses. Their necks seemed to be affected as they would keep their noses to the ground, but did not graze. The DDT dust was removed from the vegetation by wind, the tramping of the animals, by a slight rain, and possible deterioration, and the animals recovered. It is believed that when there is recovery it is complete, but investigators are still working on the subject.

A month later we dusted the field in like manner at the rate of 40 pounds per acre. The animals behaved in the same manner as with the first treatment but again all recovered. One of the ewes was taken to the University of Southern California where we continued the feeding experiment. Beginning July 10 a dosage of 2 grams of DDT daily was orally administered by capsule, and continued for eleven days. No symptoms were noticeable and the dose was increased to 4 grams per day and continued for forty days. On August 30, still no symptoms were noticeable, and the dose was further increased to 8 grams daily for 14 days and then to 16 grams daily, and death ensued 17 days later. Dr. Thienes said that after the dosage was increased to 16 grams daily, pronounced nervous symptoms in the form of tremors of the hind quarters and pawing with the fore-legs were soon observable. These symptoms of a disturbed central nervous system became more pronounced until the animal was unable to rise from the ground, stand on all four legs, or manage itself. Upon autopsy the kidneys and liver showed moderate degeneration, but not sufficient to cause death, and the mechanism of killing is still in doubt. Use of a single animal is not conclusive, but may indicate what one may anticipate. The results are probably less severe than if the DDT had been dissolved, but we wished to gain an idea of the actual effect on ruminants grazing on DDT dusted pastures.

The best information to date on experimental poisoning and pharmacologic action of DDT, is in three articles released in the July 28 and August 4, 1944 numbers of Public Health Reports, which are entitled "Experimental Poisoning with DDT", "The Pharmacologic Action of DDT" and "Histopathological Changes Following DDT Administration".

In the first article, experiments were carried on with 5 cats, 41 rabbits and 34 rats. DDT was administered orally in various doses which produced acute and cumulate effects. It was also applied to the skin and some effect was noticed. Pronounced neurologic symptoms were observed, but histologic alterations in the central nervous system were relatively slight. The most striking pathologic alterations were seen in the liver.

In the second article it is stated:

"The symptoms which this compound produces in experimental animals strongly resemble in some respects the action of phenol. Except for the delayed onset, which may be several hours, and persistence of action, which may last for one to several days, the hyperexcitability, the generalized fine and coarse tremors, culminating in flaccid or spastic paralysis with occasional tonic and clonic convulsions preceding death by respiratory paralysis, suggested the possibility of phenol or phenol-like substances being formed in the body in the course of systemic poisoning."

The article further stated:

"Because of the insolubility of this substance in water it has been necessary to administer the compound in solution in olive oil or in aqueous suspension with gum acacia. Gastro-intestinal absorption when given in aqueous suspension is irregular and poor, consequently the toxicity of the substance when given in this manner is much lower than when given in olive oil. The LD-50 in rats when given intragastrically in 1 to 5 per cent solution in olive oil is 150 mg. per kg.; in rabbits, 300 mg. per kg. [The LD-50 dose without vegetable oil undoubtedly would be greater than the figures given here.] Death may often be delayed for several days. It may be of interest to compare the toxicity of this compound with that of phenol, similarly administered, it being more than three times as toxic as phenol in rats and possibly twice as toxic in rabbits."

The third article deals with microscopic studies of 16 rabbits, 38 rats, 24 guinea pigs, 14 mice, 12 chicks, 6 dogs, 3 cows, 3 sheep and 1 horse. Practically all organs and glands were examined. Although there were wide variations in sensitivity to the compound among the different individuals of given species, the lesions caused were quite consistent throughout the different species. On the higher dose levels with the animals surviving for one to several weeks, there was typically caused a moderate degree of central necrosis of the liver, or with the longer periods of survival a combination of central necrosis and a moderate subacute degeneration of the liver. The thyroid gland and the voluntary muscles showed slight to moderate effect.

Dr. Herbert O. Calvery, Chief of the Division of Pharmacology, U. S. Food and Drug Administration, reported in a November 3, 1944 news release that in solid form DDT applied topically to the skin of several species of animals has not shown irritation nor sensitization and is not appreciably absorbed. In solution, either in oil or in organic solvent, it does readily penetrate the skin, is mildly irritating and a mild sensitizing agent to test animals.

(To be continued in July, 1945, issue of Pests)

DDT Labeling

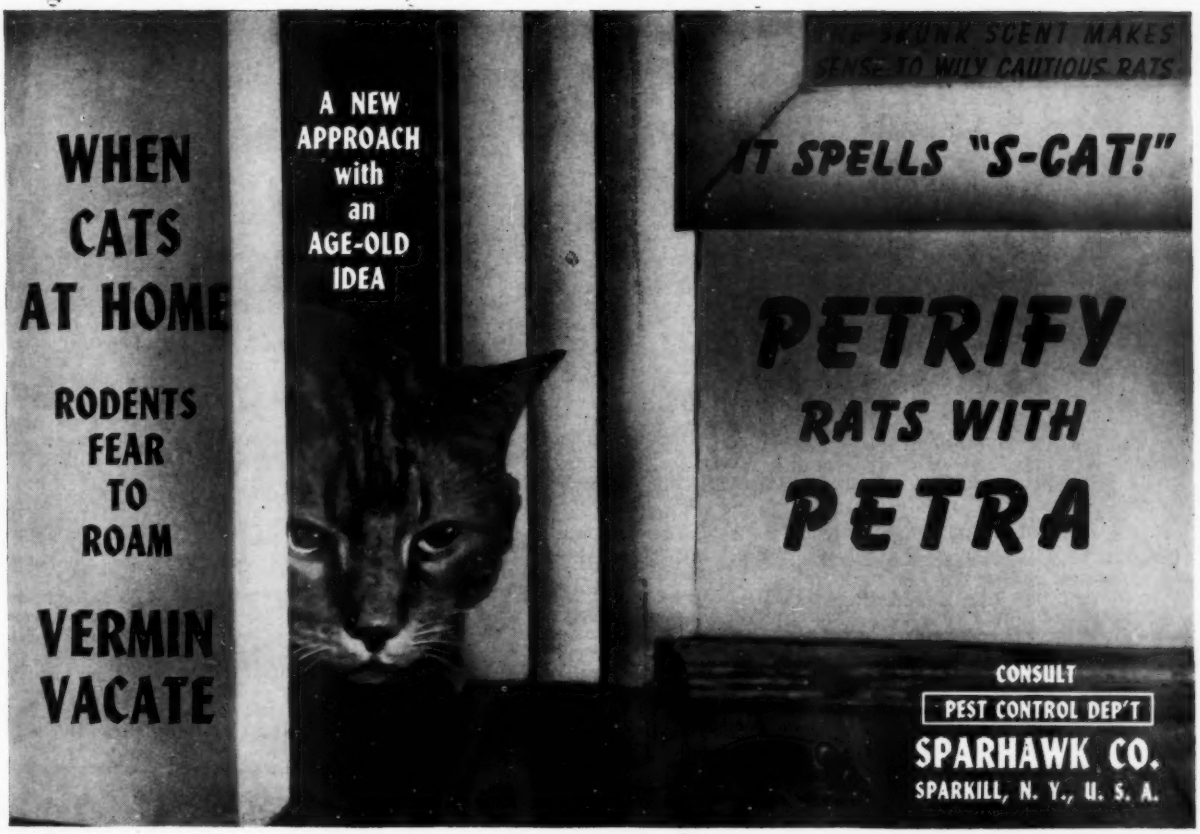
Because the normal impurities in DDT are active ingredients within the meaning of the insecticide act, according to the War Food Administration, its labeling, says this same agency, does not have to bear an ingredient statement. In clarification of the labeling procedure, WFA stated:

When DDT is applied as an insecticide, it is mixed or compounded with other materials to make it suitable for application. If all of the ingredients are active, no ingredient statement is required to appear on the label, but if any of the added ingredients are inert—that is, if any of them are not in themselves insecticides for the purposes intended—the label is required to bear the name and percentage amount of each and every inert ingredient or, in lieu of this, the name and percentage amount of each and every active ingredient, together with the total percentage of the inert ingredients. The ingredient statement is required in the case of shipments of insecticides intended for experimental use, as well as those made for commercial use.

There is at the present time no practical method of determining all of the different compounds in DDT. In view of this, no objection is raised to considering dichloro diphenyl trichloroethane (which includes 2,2-bis (parachlorophenyl) 1,1,1-trichloroethane and its isomers) as the active ingredient.

The insecticide act does not require poison labeling but since the use of DDT involves certain hazards, products containing it must not be labeled so as to state or imply that they are safe or non-poisonous. Furthermore, it is desirable that the labels of insecticides containing DDT bear a caution to avoid personal injury.

—*O. P. D.*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The Medical Officer of Health and His Relations With The Pest Control Operator

By **D. V. CURREY**
Medical Officer of Health, St. Catharines, Ontario, Canada

Editor's Note: The following paper was read by Dr. D. V. Currey at the Third Annual Canadian Pest Control Operators' Conference held at the University of Montreal, P. C., Canada, February 19, 1945.

IT IS A REAL PLEASURE to be invited a second time to speak to your Association at its Annual Meeting. Apparently you do not believe in the old adage that "lightning never strikes twice in the same place". It is a privilege to return to this beautiful university and renew friendships made last year. When I look over your programme I realize how broad is the scope of your work and how much instruction you are able to cram into a few days.

Common Responsibilities

The Pest Control Operator and the Medical Officer of Health have many things in common in regard to fumigation: each is interested in the efficient destruction of pests which make life miserable for people and which may also spread disease; each has certain responsibilities to the Province, to the municipality and to the public; each is anxious that fumigations be carefully and safely done; and each must realize the potential danger in using fumigants, and the necessity of precaution; because one fatality in this work may have a deterring effect for a long time on the work in that community, and perhaps even in remote places. The closer the PCO and the MOH work together in harmony the better, so each of us should know what is expected of the other.

Legal Aspects

All Provinces of Canada, with few exceptions, have a satisfactory Act and Regulations which outline what must be done in regard to every fumigation where dangerous gases are being used. However, most of the Provinces only consider as fumigations when hydrocyanic acid or cyanide compounds are used. In Ontario, for instance, the Public Health Act has the following definition: "Fumigation shall mean fumigation by the use of hydrocyanic acid or cyanide compounds" and "Fumigator shall mean any person who by himself or his associates, employees, servants, assistants or agents carries on the business or occupation of fumigation of premises". If we keep to the legal interpretation of this Act there would be no restrictions in regard to the use of any other lethal gas used as a fumigant and persons using any other gas but cyanide would be considered to do fumigation. One hesitates to think of what might happen if lay persons promiscuously commenced to use other types of lethal gases to rid their premises of vermin.

It would seem only reasonable that your members follow the wording adopted by your Association last year under "Good Domestic Fumigation Practices" which gives much broader definitions of fumigation and fumigator, viz:—"Fumigation shall mean and include the use of any substance, which by itself or in combination with other substance, emits or liberates a gas, fumes or vapors; and which gas, fumes or vapors when liberated and used for the destruction or control of insects, vermin, rodents and other pests are lethal, poisonous, noxious or dangerous to human life." And "Fumigator is one competently trained and experienced in the use of fumigants. Specifically, he must know basic facts of whatever fumigant is used such a cyanide or combinations thereof, carboxide, methyl bromide, chloropicrin or any other gas, fume or vapor as hereinbefore defined. Regardless of any specific fumigant he may use, he should possess general knowledge relative to other fumigants. He must understand thoroughly (1) the hazards involved; (2) precautionary or safety measures; (3) use of gas masks; (4) effects, residual and otherwise, upon foods and commodities; (5) dosages and exposure periods; (6) factors forming a part of adequate and safe ventilation including re-occupancy; (7) Schaeffer Prone Method, and (8) other essential details that will assure satisfactory and safe fumigation.

Before being placed in charge of any fumigation, he should have engaged, under observance of his tutor, as a supervisor-fumigator in a minimum of 25 complete fumigations.

It would appear that the interpretation used by your Association covers these terms quite completely so there seems to be no good reason why all of your members should not subscribe to these definitions. Some municipalities have by-laws which are just as broad; in our own we try to include all types of gases when we state "No person shall fumigate any building or any portion of a building nor shall the owner or occupant of any building or portion thereof permit the same to be fumigated unless a permit authorizing such fumigation has been secured from the Medical Officer of Health." From this it would seem that our by-law governing fumigation goes considerably beyond the Public Health Act and the Regulations of the Province of Ontario.

Rat Control

In smaller municipalities the Medical Officer himself supervises any fumigation done by a pest control operator, but in the larger places where the Sanitary Inspector is on full-time, this official usually acts for the Health Officer. The Sanitary Inspector, the Pest Control Operator and the MOH should all be interested in pest control work, not only in the fumigation of premises, but also in the control of rodents. This latter work will, in my opinion, increase considerably in the next few years because many municipalities are commencing to realize that it is good business to eliminate rats. In the past year we have done considerable work in St. Catharines in this regard, and we have a very active committee on which one of your members acts in a consultive capacity and has given us a great deal of help. We realize that rat-proofing, keeping premises free of garbage and doing away with places where rats may harbour, are very necessary in the rat control programme. Our committee feel that the actual work of extermination, however, should be done by a pest control operator, so in no way do we interfere with his work.

Advertising

The Health Officer's chief interest in regard to pest control is the efficacy of the work as well as its safety, but the PCO has other things to consider especially that in regard to remuneration for his work. We realize that this is now highly competitive business. It is difficult to know how much the MOH should concern himself in regard to pest control advertising, but if in our own municipality there appeared the type of advertising which occurs in some other places I think I would be interested. When one reads in the paper that fumigations can be done by certain firms but no publicity need be given, or that there is no need to notify the health department, even if these slogans were perfectly legal, they do seem to give the public the idea that pest control is a very simple matter. Some advertising appears to me to infer that certain firms can beat the Regulations, others give the opinion that fumigation is done, but the operator does not use gas. For many years your Association has tried to raise the standard of pest control work, but certain types of advertising mitigate against this. Your members must be fair with people instead of making it difficult for the public to realize what pest control work really means. Personally I hope never to run up against some types of advertising but should I do so, in my health broadcasts I would certainly explain things very carefully to my listeners, and also prepare newspaper articles to let our people know just what fumigation means and what they may expect from it.

Education of the Public

If we are to enlarge the scope of the work of the PCO then considerable work in educating the public will be necessary, and in this field the MOH can be of considerable use. All of you will remember when it was considered a disgrace for anyone to have a placard on his home for fumigation, but where the public is educated they now realize that the same placard is for their protection, and they now know that fumigants are being used for other things than bedbugs.

Permits

Where fumigation is done and a lethal gas is being used in any premises the PCO in most provinces must obtain a permit from the MOH of the municipality concerned. Unfortunately, this may incur some hardship because often the MOH is not available, but even then the PCO has no right to go ahead without a permit. There have been times when the operator has not had an oppor-

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tunity ahead of time to reach the MOH, but a phone message especially in rural communities might save the PCO a long, needless trip. In most fumigations there is no need for haste, and the issuing of the permit has a good psychological effect on the client because it makes him realize that fumigation really means something, and the fact that the PCO follows out the Regulations tends to create confidence. It seems to me that the PCO can receive a better remuneration for his work when the people realize that he is doing it in a scientific manner. Many people ring the MOH in regard to fumigation, and it certainly creates much more prestige when we are able to tell these people there is a PCO in our community who will properly do the work.

Conclusion

The PCO and the MOH by working together can help one another a great deal in any municipality. The right way often is less trouble than the wrong way, and both should follow out the Regulations to the letter by working in close harmony; if they do, then pest control work in any community should be well and scientifically done, and accidents in this regard will be very few and far between.

The Detection of Rats By Their Droppings

ERNEST M. MILLS
U. S. Fish and Wildlife Service, New Brunswick, New Jersey

THE OCCURRENCE of rat droppings (fecal pellets) is often an important means of detecting the presence of rats on a given premise; and their freshness and abundance will frequently indicate whether the infestation is recent or not, and also give a general idea of the number of rats present.

Webb (1940) describes the pellets of **Rattus norvegicus** as from 2 to 5 mm. long, 1 mm. in diameter, elongated, varied in shape, irregular construction, and color of various shades of brown. Williams (1932) describes the excreta of rats as rod-shaped, straight or slightly curved, with rounded ends. He says that the size varies from one-fourth inch long by one-sixteenth inch in diameter to three-fourths inch long by one-fourth inch in diameter.

As to the number of droppings passed, Williams noted that they pass as few as 30 and as many as 180 droppings in 24 hours. White (1935) found that they passed an average of 50, amounting to one-half ounceful, of excreta every 24 hours. The writer found that a 269 gram brown rat voided 25 to 28 pieces every 24 hours when fed on grain (dog chow) and a 326 gram rat excreted from 33 to 38 pieces. These two rats consumed a little over 10% of their body weight each day of the dried grain and other ingredients.

There are two tables found in the literature giving pertinent data. Donaldson (1924) gives the following information:—(Only partly quoted.)

Average body weight in group	Feces in 24 hours	Urine in 24 hours
38 grams	216 mgm.	5.7 cc.
53	135	10.4
85	329	12.6
106	305	16.8
178	412	12.5
207	496	16.4
266	639	22.1
333	919	20.9
370	637	15.0

Peirce (1930) made the following observations:—(Size and species of rat not specified.)

Diet	No. droppings 24 hours Series 1	No. droppings 24 hours Series 2	Size of dropping
Bran	138	119	1¼ to 1½ in. long, ¼ dia.
Cottonseed	103	71	¾ in. long
Wheat	68	71	½ in. long, ⅛ dia.
General	42	71	¼ to ½ in. long, ⅜ dia.
Linseed	54	52	¼ in. long, ⅛ dia.
Sunflower seed	49	54	½ to ¾ in. long, ⅛ dia.
Wholemeal flour	49	42	⅛ in. long
Shelled peanuts	25	35	5/16 in. long, ⅛ in. dia.
White flour	23	28	½ in. long
Rice	20	23	¼ in. long, ⅛ dia.

From the above table, it will be seen that the size and number of droppings vary with the diet and size of the rat. In the case of rice as food, the droppings were almost as small as those of house mice.

It is often important to decide if the rat infestation is recent or old. The appearance and consistency of rat droppings is a good indicator. Freshly passed droppings are shiny and soft. After a day or two, they become dull and harder. After several days, they may be discolored, very hard, and covered with dust. The conditions of temperature and humidity should be considered when making such an examination. The presence of only shiny and soft pellets would confirm a very recent infestation. A mixture of the various types would suggest that the infestation is still present but of long standing.

Rat droppings will be found in greater abundance along their runways, particularly in places seldom disturbed. They are deposited frequently, singly, but not in piles or groups. A careful examination is essential to avoid any confusion with other objects as small pieces of coal or small grains covered with coal dust or other dark particles.

REFERENCES

Donaldson, Henry H. The Rat. Phila. Memoirs of the Wistar Institute of Anatomy and Biology No. 6, 1924.
Pierce, E. R. Rat droppings. Medical Officer (London) Vol. 43, pp. 222-4, 1930.
Webb, John. Identification of rodents and rabbits by their fecal pellets. Kansas Academy Science Trans. Vol. 43, pp. 479-81, 1940.
White, C. F. Plague: Modern preventive measures in ships in ports. Proc. of the Royal Society of Medicine, Vol. 28 (5) p. 591, 1935.
Williams, C. L. Rat infestation inspection of vessels. Public Health Reports, Vol. 47 (4), pp. 765-800, 1932.

Action Wanted Against Rats, Mosquitos

One of the most important public health measures considered by the Oregon House of Delegates concerned the possible impending epidemics of rat borne and mosquito borne diseases such as typhus, bubonic plague and malaria.

It is known the anopheles mosquito is found widely spread throughout western Oregon and the Cascade mountains, particularly in the Willamette Valley, and the malarial outbreaks have occurred endemically in these regions. With the return of malarial carriers from the Pacific theater of war the menace will be increased many times, hence the concern of the Delegates that something tangible be done now to avoid wholesale epidemics in the immediate future. Due to the war, mosquito control has generally been allowed to lapse. It was the opinion of the delegates that steps should be taken immediately by the State Board of Health, as the most effective means of preventing such probable epidemics.

The matter of the rapidly increasing rat population of the state, in the presence of known animal reservoirs of bubonic and other rat-borne diseases in the Northwest, also came in for grave consideration. This problem is particularly acute in Portland and Multnomah county, where the rat population considerably outnumbers the human population, promises to became still larger if remedial steps are not soon taken. The menace is not confined to the vicinity of Portland, but extends along the Willamette valley and to a lesser extent elsewhere throughout the state, hence the concern expressed to the State Board of Health that it should get action now against the twin menaces. —*From Northwest Medicine.*

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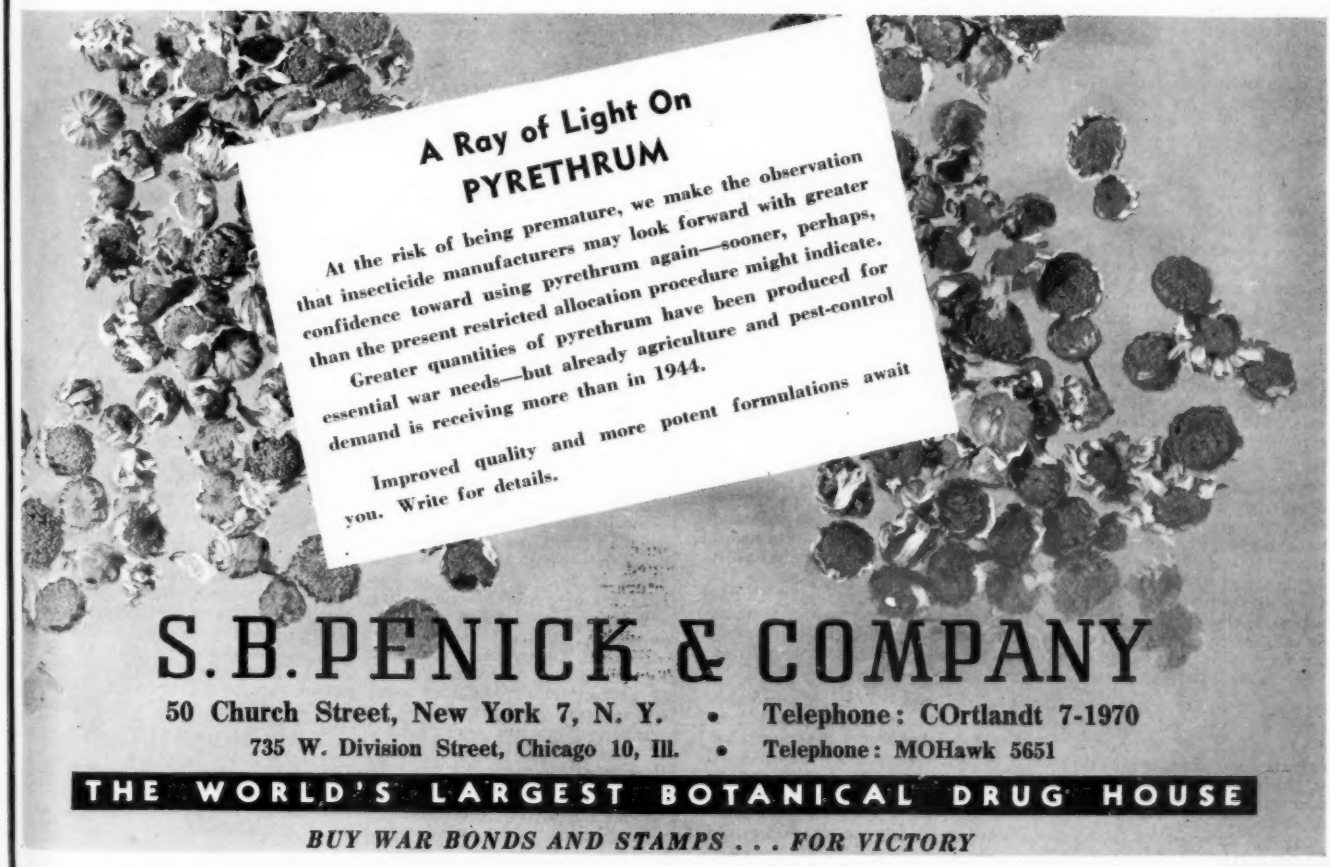
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Powder-post Beetles and Their Control and Notes on Chlorinated Phenols as Soil Poisons for Termite Control

By **MOSS B. CHRISTIAN***

ALTHOUGH THERE ARE fifty or more species of beetles in this country that attack partly seasoned and seasoned wood and come under the common term "powder-post beetles", this large group can be simplified to about four families or types, namely, the **Cerambycids** or long horn beetles, the **Bostrichids** or sugar beetles, the **Anobiids** or furniture beetles and the **Lyctus** or true power-post beetles.

Probably the most alarming and least destructive are the members of the cerambycides or long horn beetles. With the exception of three or four species, the long horn beetles are true forest insects which can lay their eggs only in relatively fresh bark on logs and lumber and, consequently, cannot reinfest or perpetuate themselves in seasoned woods such as that in buildings and furniture. The grubs are commonly called sawyers and among the larger species may measure an inch or more in length. They are frequently present in air-dried lumber (both pine and hardwoods) used in the construction of buildings, etc., where they may continue a semi-dormant existence over a number of years, pushing forth small quantities of dust and undigested wood at intervals. On the other hand, several members of this group can reinfest seasoned wood and after once established do cause severe damage. An example of the latter is the flat powder-post beetle, **Smodicum Cujiforme.** However, these destructive species are not very common.

A second group or type is represented by the bostrychid beetles. Generally speaking they are smaller than the long horn borers, but are more destructive to seasoned wood. Two or three generations may be passed in the same host. Damaged or infested wood is characterized by numerous shot holes in the surface of the size of a match head or larger. These are made by the adults both in entering the wood to lay their eggs and by the offspring freeing themselves after maturity. However, the greater damage is caused by the larvae or grubs which tunnel about changing the interior to a more or less powder-like condition. The bostrichids attack chiefly hardwoods and are most common in log cabins and rustic work, however, they are sometimes found in hardwood floors, wall panels and furniture.

The most destructive members of the powder-post group belong to Anobiidae or Lycticidae families. Both types may reinfest a given host for many generations or until all the wood suitable to their taste is destroyed. Wood in which a generation or more has bred is characterized by small flight holes on the surface not much larger than a pencil point. Flight or emergence holes made by Lyctus and Anobiid beetles look very much alike, however, the nature of the interior damage quickly reveals which group is involved. The Anobiid larvae honeycomb the interior, leaving small pellets of undigested wood in their tunnels, while Lyctus larvae more or less pulverize the interior leaving their tunnels tightly packed with very fine dust. Although the life cycle of these two groups is very similar in that both lay their eggs on or near the surface and practically all damage is caused by the larvae boring secretly on the inside, they have never been reported breeding together in the same host.

Anobiids attack wood which has been in use or seasoned for some years, and timber which has been free from attack for twenty or thirty years may suddenly be found to be extensively infested. The actual cause of this preference for old timber is unknown, although it has been suggested as being due to a slight change in the chemical composition of the wood due to ageing, or to the association with bacteria, protozoa, or fungi in the wood. Unlike Lyctus, Anobiids attack coniferous as well as hardwood timbers and the damage may extend into the heartwood. Articles attacked vary from flooring boards and construction timbers to the finest of furniture, such as pianos.

Lyctus beetles attack only the sapwood of ring porous hardwoods. For the initial infestation, they seem to prefer newly seasoned material, however, after once established, they may continue to breed for many generations and rarely desert the host until all the sapwood is destroyed. Probably most infestations found in flooring, walls, furniture, etc., originate either on the seasoning yard or in retail storage before the articles were finished. Such damage is frequently found in articles made of ash, hickory and oak sapwoods.

Control measures:

From the standpoint of the pest control operator whose primary problem is to kill the beetle and prevent further damage to articles already infested, the control measures for all groups are about the same. Out of the many materials tried by the writer, the chlorinated phenols in oil carriers appear to be the most effective. This is a clean, paintable treatment which causes no further discoloration to the treated wood than the type of oil used as the carrier for the toxic chemical. In addition to the effective killing power of chlorinated phenols at the time of treatment, the toxic materials remain in the wood for many years giving lasting protection against future attacks by the insects. This latter feature is of utmost importance in treating against Lyctus and Anobiid beetles because even with the most thorough treatments, some stages may not be reached and killed at the time of application, but since all the eggs are laid on or near the surface, such a lasting treatment may prevent reinfestation by the insects.

For effective results, a reasonable degree of penetration within the infested wood is essential. In treatment of lumber, implement handles, and other small articles, an immersion period of three minutes is recommended. However, most powder-post beetle infestations encountered by pest control operators are in flooring boards, walls or in other fixed structures where dipping is impossible. Under the latter conditions, the chemical can only be applied with a brush or sprayer and with the exception of rare cases there will be no actual penetration of the sound wood across the grain beyond a depth of 1/16 inch. However, all the interior larval tunnels originate on or near the surface and the powdery material left by the larvae will absorb the liquids readily, and in most cases if sufficient material is applied to the surface, all stages will be reached in the tunnels below. Two or three thorough brush or spray applications are usually sufficient.

The chlorinated phenols are marketed in both ready prepared solutions and concentrated forms. The cost is low, ranging from 20c to 30c per gallon, depending on the quantity purchased. Most operators prefer the concentrate which is easily diluted with suitable oils obtainable locally. Advantages of the concentrate over ready prepared solutions are that freight costs on oil carriers are saved and that the operators can use the type of oil carrier most suitable and economical for his particular job. For illustration, in the treatment of floors, furniture, etc., a quick drying carrier such as Stoddard's Solvent or cleaning fluid would be most desirable, while in the treatment of foundation timbers the less expensive fuel oil would be just as effective.

Notes on chlorinated phenols as soil poisons against termites:

Although the work with the chlorinated phenols and phenates as soil poisons for termites has not been in progress long enough to determine the average period of effectiveness, the results to date are very promising and will probably be of interest to the pest control operators. Pentachlorphenol (5 percent oil solution), at the rate of one gallon per 10 linear feet of trench has effectively prevented termites from crossing the treated trench for a period of four years. Sodium tetrachlorphenate applied at the rate of 2 lbs. per 10 linear feet of trench is about 90 percent effective over a period of four years. These materials are being tested in the presence of severe termite infestations already established in buildings. The cost of such treatments for chemical alone would run about 20c to 30c per 10 linear feet. The results obtained in this test confirm results of tests conducted by manufacturers of pentachlorphenol and others indicating that 5 percent petroleum oil solutions of pentachlorphenol provide effective and economical control over termites through soil poisoning methods. Additional information and the recommendations of the U. S. Department of Entomology and Plant Quarantine regarding the use of pentachlorphenol as a soil poison can be found in the U. S. Department of Agriculture Farmers' Bulletin No. 1911, "Subterranean Termites and Their Control."

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Use of DDT for Mosquito Control in the United States

A Joint Statement of Policy by the United States Army and the United States Public Health Service[1]

Successful use of the new insecticide DDT to combat insect-borne disease among our troops overseas has brought sudden renown and notoriety to this potent war-developed insect killer. Dramatic reports of its large-scale use to control epidemics, and especially the spraying of DDT from aircraft, have fired public imagination and fostered the hasty conclusion that DDT is a complete solution to all of our insect-borne disease problems. However, it must be remembered that DDT distributed over the countryside not only wipes out malaria-carrying mosquitoes but also may kill other insects, many of which are beneficial. Much still must be learned about the effect of DDT on the balance of nature, important to agriculture and wildlife, before general outdoor application of DDT can be safely employed in this country. It may be necessary to ignore these considerations in war areas where the health of our fighting men is at stake, but in the United States such considerations cannot be neglected.

Extensive investigations are now being carried out by authorized agencies to determine the usefulness and possible hazards in the large-scale dissemination of DDT. Until more information has been obtained from such investigations and until it has been evaluated by all interested parties, plans to employ DDT indiscriminately for outdoor area control of insect disease vectors in this country are not to be encouraged.

Since the beginning of mobilization the Army has carried on an extensive antimosquito campaign inside of military reservations and the United States Public Health Service has maintained a cooperative program for the control of malaria in adjacent extramilitary areas. This joint effort has successfully prevented malaria from becoming a problem to troops in this country. To meet the hazard of possible spread of malaria by troops returning from overseas, the Army's program in military areas has been intensified and the program of the United States Public Health Service has been extended to include certain additional selected areas in the South where risk of transmission is greatest. Representatives of the Army and the United States Public Health Service have given full consideration to ways in which this mosquito control program might be strengthened by employing DDT. The following joint policy has been agreed upon pending acquisition of further knowledge concerning the large-scale outdoor application of DDT:

1. DDT will be used for residual spray application to houses and other buildings for the purpose of killing adult mosquitoes before they have opportunity to transmit malaria. The long-lasting killing effect of DDT as a residual spray provides a highly effective means to prevent the spread of the malarial parasite. This method of use is safe and economical, and, moreover, is welcomed by the householder because it provides freedom from insect annoyance.
2. The use of DDT as a mosquito larvicide will be limited to experimental investigations and to situations where DDT has definite advantage over other larvicides in saving materials and manpower, and where it presents no hazard to fish and other wildlife.
3. Distribution of DDT from aircraft for large-scale area control of mosquitoes in military and adjacent areas in the United States will be limited to projects conducted with due regard to the possible effects of DDT on beneficial insects and all forms of plant and animal life and in accordance with safeguards established by the Surgeons General of the Army and the United States Public Health Service.

[1]Adopted at a meeting between representatives of these Services held on March 31, 1945.

HANDBOOK OF PEST CONTROL

The Behavior, Life History and Control of Household Pests

By ARNOLD MALLIS

This new book is a thoroughly practical, complete and up-to-date study of pest control which will be invaluable to every insecticide manufacturer, pest control operator and entomologist. Approximately 570 pages in length, and containing 140 illustrations, it deals in a practical way with the behavior, life history and control of household pests.

While there have been other books in this field, Mr. Mallis' book is by far the most complete and up-to-the-minute practical text on the subject. It reflects insecticide developments as recent as those of the past few months, carrying for instance, the most recent findings on DDT, aerosol insecticides, insect repellents, etc. The emphasis throughout is on control measures, and the author covers fully all the commonly used insecticide materials and treatments. Fumigation is the subject of a special chapter.

An unusually complete list of references to the literature on household pests, insecticides and their use adds considerably to the value of Mr. Mallis' new book. Hundreds of references to the technical literature are listed.

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HANDBOOK OF PEST CONTROL has standard high-grade book binding, cloth and board covers, 6 x 9. Priced at $6.00 per copy. Check **must accompany** order. Owing to present conditions, the first edition must be limited. Accordingly, an **early order** accompanied by check is suggested.

Pests ..... **$6.00, Plus 15c Postage**

Arkansas State Plant Board, Little Rock

Termite Operators Fined

J. H. Tyrone and A. B. Wingo, charged with having engaged in the termite business without being licensed as required by Act 394 of 1939, have pleaded guilty and were given fines which with costs totalled $102.30, according to information received from Deputy Prosecuting Attorney Cul. L. Pearce of Searcy. Under the provisions of Act 394, all termite or other pest control operators must secure licenses from the Plant Board, which are issued only to such applicants as can demonstrate their ability to do satisfactory work.

The two men, operating as the Delta Termite Company of Blytheville, Arkansas were arrested near Searcy on March 30. Plant Board inspectors who afterwards examined several houses which they had treated, reported that termites were still present in some of the houses, and that others were apparently not infested at the time they were treated, contrary to the representations made by the men to the owners. Prices charged for treatment ranged from $150 to $250 per building.

License Becomes Invalid

The license of the Superior Termite Company, Blytheville Arkansas, automatically became invalid on May 4, under the provisions of Section 3 of Act 394 of 1939, because the company no longer had an authorized operator in its employe.

Paul H. Miller, Chief Inspector.

May 12, 1945.

Navy Finds the Beetle Invading Constitution

By The United Press.

WASHINGTON—The United States Constitution has been invaded by one Attagenus Piceus Dermestidae, or a black carpet beetle.

The bug was found crawling on the original of the Constitution in the Library of Congress.

Two sailors—both gunners mates, Frank Small of Salem, Mass., and C. Zwaska of Chicago—spotted the intruder on Saturday, but no harm had been done, and dichloride crystals were put in the Constitution's case as well as that of the Declaration of Independence to prevent any further invasions.

—*N. Y. Times.*

Does Your Copy of Pests Arrive Late?

If so, please remember, wartime transportation is subject to frequent and unforeseen delays. Late delivery of your copy of Pests means that your area has been affected. Pests magazine is still being printed and mailed on its regular schedule, and we shall continue to endeavor to get your copies to you on publication date.

Reprints of Articles

Requests have been made from time to time relative to reprints of articles being available. This publication will make possible reprints of any article in this issue if orders are received within 10 days of receipt of this publication. Charges are based on the length of the article.

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WHAT'S NEW IN PEST CONTROL-PERSONALS

Vogel-Ritt, Inc., announce the opening of their new branch office at 174 W. Jackson Blvd., Chicago 4, Ill. with David M. Wiesen, Sr. as manager and David M. Wiesen, Jr. as assistant manager. Both Wiesens have been connected with Vogel-Ritt for many years, the father as District Manager for their upstate Pennsylvania office and the son lately as manager of their Trenton, N. J. office.

The Vogel-Ritt organization with headquarters at 2212 Chestnut St., Phila., is also operating in Baltimore, Md., Hagerstown, Md., Cincinnati, Ohio, Columbus, Ohio, Wilmington, Del., Trenton, N. J., and several offices in Eastern Pennsylvania.

Messrs. J. G. Vogel and A. E. Ritt are also associated in the Terminix Company of Philadelphia, Terminix Company of Baltimore, Bruce-Terminix Company of Atlanta (with Mr. A. L. Greever as President), No-Vex Company of Atlanta and No-Vex Company of Macon, Georgia.

In addition to their interests in the pest control field, Messrs. Vogel and Ritt own and operate the Weathercraft Company in Philadelphia, which is engaged in building insulation, and also maintain a plant for the manufacture of storm windows, screens, door sashes, etc.

GEORGE B. LAY, THE HALF-CENTURY MAN: The fiftieth birthday of George B. Lay, District Agent of the U. S. Fish and Wildlife Service, whose residence is at Hopkinton, served as an excuse for Bartlett W. Eldredge, George R. Elliott, Mark Weintraub, Lester West, George Small, and Kenneth Cook, to celebrate. The boys from New England paid a little surprise visit to Mr. Lay, bringing the usual birthday cake and other prebaiting material.

Congratulations to Mr. and Mrs. B. G. Berger on the arrival of a baby boy, 8 pounds, 12 ounces, born on April 19th. Mr. Berger is Assistant Entomologist, of the State Natural History Survey Division of Illinois.

WALTER MOORE—A man with plenty of pep and certainly a booster for his company, "Orkin, The Rat Man," of Richmond, Virginia,—paid a visit to New York City recently. It was a pleasure to have him discuss matters of interest about the industry.

MARVIN J. ROLSTAD HEADS MICHIGAN CHEMICAL, INSECTICIDE DIVISION—Michigan Chemical Corp., Saint Louis, Michigan, announces the appointment of Marvin J. Rolstad as Manager of their Insecticide Division. Mr. Rolstad has had fifteen years experience in many branches of the insecticide business, having been in the employ of McLaughlin Gormley King Company, Rohm and Haas Company, U. S. Industrial Chemicals, Skol Company and Geigy Company.

JERRY GOODMAN, honorably discharged from the Army after serving 1½ years, is now back on the job with his former firm, B. & D. A. Weisburger, N. Y., insurance counselors.

SOCIAL NOTE.—When Donald Nelson was in China, anecdotes Leonard Lyons in the N. Y. Post, he and his aide, Edward Locke, lived at the home of a wealthy Chinese. Their beds were covered with netting, as protection against insects, scorpions, etc. One morning Locke reported that during the night he found a large rat in his room, chased it, and bashed its head with a club. "Then I took it outside, and gave it to the soldier-guard," Locke told Nelson. "He patted its head until it was revived, and set it loose. He said when a rat comes to a man's house that's a sign that the man has food, and therefore wealth and distinction."

MAYBE THEY'RE SUPERSTITIOUS.—At Indianapolis, employes of the Federal Building have hit on a way to cope with the pigeons that clutter up the copings. Cardboard black cats have been placed on the high ledges to scare the pigeons away and, Indianapolis reports, it works. Pigeons, it seems, hate the sight of a black cat.

GOEBBELS HAS BEEN TRYING to get Hitler, according to one of those stories that's going around, but the operator couldn't get through. Goebbels finally asked if the phone was all right. "Yes," said the operator, "the phone is all right, but the house has been disconnected."

STRAWBERRY CAGE.—When squirrels and birds steal strawberries just as they ripen, the gardener has a problem on his hands. One good answer is a cage around the berry patch. If the patch is small, the framework can be constructed of five six-foot sticks and some one-inch chicken wire. Four sticks are used for the outer edge to form a square. The fifth stick is cut up into four lengths of eighteen inches each which are placed at the corners to raise the frame from the ground. The whole frame, including the sides, is then covered with chicken wire, which can be held on with wire twisted around the stakes. The cage is then placed over the strawberry patch. When the strawberries have to be picked or weeded, the cage can easily be lifted off.—L. H.

—N. Y. Times.

NICOTINE, according to AIF News, has been synthesized in the laboratory, but the prospects for its commercial manufacture are not bright. The pyrethrins and rotenone possess such complicated structures that there is little hope for their synthesis in the laboratory, much less on a commercial scale. —H. L. Haller, Bureau of Entomology and Plant Quarantine.

PYRETHRUM IN CEYLON.—Pyrethrum has been planted on 50 acres in the Nuware Eliya district of Ceylon by the Department of Agriculture. Output will be sufficient for the requirements of the medical department, which initiated the project. Planters in the area are said to be interested in pyrethrum as a secondary crop.

—Cheoa. & Eng. News.

OPA CAN'T FIND RULE THAT COVERS BEDBUGS.—Denver, May 5 (AP)—OPA officials can't find a rule in the book to cover it. So the demand of an excited Denver citizen that his rent be reduced goes unsatisfied.

"It's the bedbugs," he complained. "They're gettinug bigger and bigger and more and more."

KANSAS APPROVES POISON COLORING BILL: Bill (H. 64), designed to provide distinct identification for economic poisons by means of coloring, was passed by the Kansas legislature. The new law makes it unlawful to sell any sodium fluoride, sodium silicofluoride, calcium arsenate, as well as any other poisonous insecticide or rodenticide unless said poison has been colored in such manner as to make it readily distinguishable from food products.

MRS. ELEANOR ROOSEVELT.—During her 12 years in the White House, according to Time Magazine, Eleanor Roosevelt had enjoyed dozens of small, domestic triumphs, one of which consisted of vanquishing the rats, hardy rodents whose forebears had scuttled through the walls since U. S. Grant's day.

CAN EAT CITY PIGEONS FREE.—Meat-hungry Indianapolis residents can get free fowl from a generous city administration which has a surplus of pigeons. For the fastidious who want them dressed there is a slight charge of 10 cents each. The birds were trapped in a drive to rid the downtown district of the pests.

—N. Y. Times.

NEW BRITISH INSECTICIDE EXHIBITS HIGH POTENCY—Efforts of a British concern to find an easily synthesizable replacement for scarce and costly derris have resulted in the development of a new insecticide which they report to be five times as potent as DDT, according to U. S. I. Chemical News.

The new substance is benzene hexachloride, briefly identified as "666" because of its formula $C_6H_6Cl_6$. Tests revealed that the gamma-isomer, present in the crude material in concentrations of from 10 to 12 per cent, was more toxic to weevils than any substance that this concern had ever tested. On the other hand, the alpha- and beta-isomers are virtually non-toxic.

If laboratory results are duplicated in commercial applications, new insecticide formulas will undergo drastic revisions.

SO_2 HOUSEHOLD FUMIGANT PREPARED WITH ACETONE—In spite of its many desirable qualities as an insecticidal fumigant, sulfur dioxide has always been hard to handle because it is a gas at ordinary room temperatures. Mixed with acetone, sulfur dioxide becomes a definite liquid compound, whose vapor pressure is sufficiently low to allow it to be packaged in ordinary tin containers. Furthermore, a mixture of 1 part acetone with 1.9 parts sulfur dioxide, by volume, is non-inflammable in all concentrations in air. This liquid is stable while confined, but upon exposure to air decomposes and becomes progressively volatile.

In tests, the liquid was absorbed in diatomaceous earth pellets, and a quantity of these pellets was exposed in a room containing the test insects. The compound, when evaporated into the air, was lethal to the insects, which included bedbugs, flour beetles and carpet beetles. Treatment was harmless to wallpaper, white and colored fabrics, painted surfaces and metals.

Apparently the acetone-sulfur dioxide compound holds possibilities as a commercial fumigant, and will bear further investigation.

U. S. I. Chem. News.

DDT TRANSPORTATION RULE MADE. —The Interstate Commerce Commission has issued list CFR 73 revising the transportation rule on DDT classifying the material as poison B, applying sections 352, 361 on exemptions and packing, requiring a poison label, and setting a 200-pound maximum for shipment by express.

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LOCAL ORGANIZATION NEWS

Toledo, Ohio

A dinner meeting was held at Hillcrest on Saturday, April 14th in Toledo, Ohio. Of paramount interest is the rodent control program which is receiving the backing of the County Council and Health Department. Speakers included Theodore Oser, President of the National Pest Control Association; Dr. Warren Hartung, Health Commissioner; Eral O. Lehman, Chairman of the Council's Rodent Control Committee; Dr. Warren P. S. Hall, Superintendent of the Bureau of Sanitation; and William O. Buettner, Secretary of the National Pest Control Association.

Discussions primarily centered around ways and means of making for an effective rodent control program. There being no precedent that will completely allow for a rodent control to be set up, emphasis was for an educational program that would stress the importance of sanitation and rat proofing with control measures being left for the pest control operators. Bill Buettner was quoted in the local press, "A survey or careful inspection of premises or an area be made of the infested rodent section of the city and an aggressive educational effort be made by means of visualization program of pictures showing the flagrant insanitary conditions and thus throwing the onus on the public. Unless a city has proper collection and disposal of garbage and refuse, headway will be slow."

Among the PCO's in attendance were Herman Militzer of the H. & M. Laboratory, Joe Diamond of the Federal Exterminating and Fumigating Co.; Morris Diamond of the Diamond Chemical Co.; J. W. Kessler of the Keystone Exterminating Co., and J. G. Benschoter of the Ben-E-Lene Company.

Standing in front of the Federal Fumigating & Exterminating Co. at Toledo, Ohio, April 14th, are left to right:

William O. Buettner, Theodore Oser, Secretary and President respectively of the National PC Association, and Morris Diamond of the Diamond Chemical Co.

Dr. Alvin J. Cox, Director of State Bureau of Chemistry, Talks to Los Angeles District Association

At the March meeting of the Los Angeles District Association, Dr. Alvin J. Cox, director of Bureau of Chemistry, State Department of Agriculture, gave a most interesting talk on the new war insecticide known as DDT. "While not a cure-all," says Dr. Cox, "this product has great possibilities as an effective household insecticide. It has been proven to be very effective on various kinds of flies by various experiments that have been carried on by the department. While still in its experimental stage as to the effectiveness as to many insects of agriculture and household, it is gradually being determined as to its usefulness in this direction."

—P. C. O. News.

Greater Cincinnati Pest Control Association

Greater Cincinnati Pest Control Association had as their guest at their April meeting, Dr. Carl A. Wilzbach, City Health Commissioner.

The dinner and meeting were held in the Netherland Plaza Hotel which will be the headquarters of the next Convention of the National Pest Control Ass'n.

At this meeting Dr. Wilzbach outlined for us the intention of the City during the forthcoming Rat Control Campaign.

It is expected that through meetings of this kind in the future a closer knit cooperation between the Health Department and the Pest Control Industry will be forthcoming.

Those taking "pot shots" at each other around the dinner table and later checking their guns at the door of the meeting room were:

Bernie Scherzinger, President.
W. R. Warthen, Vice-President.
R. C. Yeager, Secretary.
Bob Adams
Dick Meyer
Bill Phippard
L. Pitts

Santa Barbara District Association Elects New Officers for Coming Year

The Santa Barbara District Association at the regular monthly meeting held Monday, April 16th, elected to office the following:

Mr. R. J. Marker, Chairman.
Mr. Arnold Alderman, Secretary-Treasurer.
Mr. E. A. French, State Director.

Committeemen:

Advertising & PCO-News, Mr. E. A. French.
Constitution and By-laws, Mr. Harry Kyle.
Conference-Convention, Mr. Arnold Alderman.
Ethics and Moral Education, Mr. C. E. Musgrove.
Insurance, Mr. Vic Faast.
Membership: Mr. B. A. Gilmore.
Legislation, Mr. Harry Kyle.
Material, Methods and Standards, Mr. J. M. Phillips.
Public Relations, Mr. R. J. Marker.

President Beliveau attended the meeting and told of the advantages of developing and maintaining a strong local association in order to cope with the post-war conditions.

San Diego District

The San Diego District of the Pest Control Operators of California, Inc., held their monthly meeting at the New Palace Hotel, San Diego.

Guests from Los Angeles area: Bill Hogan, Jesse Miller, Art Beliveau and Dave Rennie.

Local boys: Lee Christenson, Rex Murray, Scotty Raleigh, Clyde Swope, C. Lutes, E. E. Englestad, Pop Suttle, G. E. Chase, Ed. E. Greene, Jack Scherrer, T. M. McDaniel, Mr. Haas.

Turkey dinner that I think everybody enjoyed.

Mr. Segel of San Diego Health Dept. gave a short talk and asked for our backing on Senate Bill 319. Also good talks from the boys from L. A. District.

Buffalo, New York

On the occasion of the visit of President Theodore Oser and Secretary William O. Buettner in Buffalo, N. Y. on Monday, April 9th "open house" was held the entire day at Hotel Statler. Matters of interest for the good and welfare of the industry were discussed. Co-operation with city officials regarding the Local Ordinance on Fumigation-Extermination operations resulted in the appointment of a committee which would prepare a few minor amendments. Rodent Control was also a lively topic of discussion.

Among those in attendance were George B. Lay and Donald Lewis of the Fish and Wildlife Service; Dr. James W. Johnston, Jr. of the Rodent Control Division; Kenneth McLeod of McLeod Pest Control Service; Harry Lewis of the Rose Exterminator Co.; William Amman of W. F. Amman Co.; William Pickhardt of International Fumigators, Ltd.; Leon Moore of Utica, N. Y. During the afternoon a conference was had with Dr. Barton F. Haunenstein, Laboratory Director, Buffalo Department of Health.

Connecticut Pest Control Association

The annual dinner-meeting of the Connecticut Pest Control Association was held on April 23rd at The City Club of Hartford.

After an excellent dinner served at 6:30 P.M., the guests were welcomed by the President, Mr. O. N. Anderson, who then introduced the toastmaster, Mr. "Pete" Bohman. Pete, as usual, was in rare good form with his ready wit.

Tom Mahon, representing the National Pest Control Association, in the absence of its Secretary, Mr. Wm. O. Buettner, conveyed the good wishes of the Secretary's office for a successful meeting. He also took this opportunity to extend an invitation to all those present to attend a special meeting at the Hotel Commodore, New York, on May 14th, at which Mr. Charles Pomerantz of the Bell Exterminating Company, New York, will talk on the very important subject of Dog Ticks.

The principal speaker of the evening was Mr. Charles Pomerantz whose subject was "Why a PCO's Conference", and those who had not had the privilege of hearing him before must now fully realize what the pest control industry means to an operator.

George Elliott delivered a congratulatory message to Mr. Pomerantz on behalf of the New England Pest Control Association.

Dr. C. P. Alexander of Massachusetts State College, whom we also had the privilege of entertaining, spoke about the Stu-

USE

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dent Loan Fund for Research Work, and also remarked on the fine attendance at the Eastern Pest Control Operators' Conference.

Another high light of the evening was a film shown through the courtesy of Mr. Henry Turrie of Wil-Kil Pest Control, Milwaukee, entitled "The Insect and Rodent Enemies of Man". The film was received with enthusiasm and many comments were made on its educational value. Mr. Turrie is to be complimented on his perseverance and patience in producing such a fine piece of work.

Those present at the dinner were:

Charles Pomerantz, Bell Exterminating Co., Inc., New York, N. Y.
Dr. C. P. Alexander, Massachusetts State College, Amherst, Mass.
Dr. H. L. Sweetman, Massachusetts State College, Amherst, Mass.
Dr. Roger B. Friend, State Entomologist, Connecticut Agricultural Experiment Station, New Haven, Conn.
George R. Elliott, Ransford Insecticide Co., Worcester, Mass.
Bartlett W. Eldredge, Treasurer, New England Pest Control Association, Waltham, Mass.
Dr. Geo. H. Chapman, Special Representative, American Cyanamid & Chemical Corporation, New York, N. Y.
Tom Mahon, Office of the Secretary, National Pest Control Association, Brooklyn, N. Y.
Lester M. West, President, New England Pest Control Association, Boston, Mass.
Warren J. Scott, Director, Bureau of Sanitary Engineering, State of Connecticut Department of Health, Hartford, Conn.
J. Horowitz, Department of Health, Hartford, Conn.
David A. Weisburger, B. & D. A. Weisburger, New York, N. Y.
Charles W. Houghton, Safety Fumigant Co., Boston, Mass.
Wm. H. Arendt, Rohm & Haas, Philadelphia, Pa.
Morris Schwartz, State Exterminating Co., Boston, Mass.
J. G. Hoeffler, American Cyanamid & Chemical Corp., New York, N. Y.
Cyril A. Chafe, Vice-President, New England Pest Control Assn., Wollaston, Mass.
Roland Cook, Ransford Insecticide Co., Worcester, Mass.
Kenneth A. Cook, Secretary, New England Pest Control Assn., Worcester, Mass.
Jack Malley, Malley Drug Co., Hartford, Conn.
C. Arthur Lantz, West Hartford, Conn.
Donald V. Bohman, Hartford, Conn.
Oscar N. Anderson, President, Connecticut Pest Control Association, Hartford, Conn.
F. E. Bohman, The Birchard System, Inc., Hartford, Conn.
Neely Turner, Research Associate, Connecticut Agricultural Experiment Station, New Haven, Conn.
John Duncan, The Birchard System, Inc., New Haven, Conn.
David Mason, Vice-President, Connecticut Pest Control Association, West Haven, Conn.
Fred Haas, Aetna Exterminating Co., Hartford, Conn.
Thomas J. Ledwith, Berg Exterminating Co., Hartford, Conn.
Joseph Putinski, City Storage Co., New Britain, Conn.
Joseph Roog, Atlantic Exterminating Co., Hartford, Conn.
Chas. N. Egan, Trinity Extermination Service, East Hartford, Conn.
Samson Spector, Tondat Fumigating Co., Hartford, Conn.
Lester A. Bureau, Secy.-Treas., Connecticut Pest Control Assn., New Haven, Conn.

Submitted by L. A. Bureau, Secy.

Ticks Discussed By Pomerantz At NPCA Meeting

Approximately 100 PCO's and others, from New York, New Jersey, Pennsylvania and Connecticut, who attended the NPCA-sponsored meeting on Monday evening, March 14, at the Hotel Commodore, N. Y., were rewarded with an absorbingly interesting, highly informative talk on "Pitfalls of a Tick Job" by Charles Pomerantz.

Mr. Pomerantz, who is associated with the Bell Exterminating Co., New York and a pioneer among PCO's in tick research, discussed the American Dog Tick and particularly the Brown Dog Tick. He pointed to the economic opportunities inherent in tick control, but warned that a tick infestation in the average home presents many difficult and unseen problems which at times seem unbelievable and fantastic. Control measures, he said, included proper materials, infinite pains, patience, hard and tedious work, and complete thoroughness on the job. Outlining the meticulous care demanded on any job, Mr. Pomerantz made known the many pitfalls that the PCO may at times overlook. For his constructive contribution, a rising vote of thanks was given Mr. Pomerantz, who, in turn, blamed his acute interest on Mr. Buettner. The meeting was then thrown open to questions which continued until past midnight.

Secretary "Bill" Buettner presided and opened the meeting with a question-and-answer period on the supply situation, apropos pyrethrum, thallium sulphate, paradichlorobenzene, strychnine and DDT.

William Farrell, of the Effective Exterminating Co., who is chairman of the 7th War Loan Drive for the Industry in New York City, urged that PCO's everywhere specify "CODE 4010" when purchasing bonds, no matter through what source, in order that the Industry may receive full credit for such purchases. In New York City the Pest Control Industry quota is $100,000.00.

In attendance were:

M. H. Oachs, Ozane Co., New York City.
Jack Shaff, A & P. Exterminating Co., Brooklyn.
William Thorpe, Tops Exterminating Service, Brooklyn.
Mr. and Mrs. William Farrell, Effective Exterminating Co., Brooklyn.
J. Huberman, Scientific Exterminating Co., Bronx.
Jas. Southwood, Bell Exterminating Co., New York City.
Arthur W. O'Connor, Security Exterminating Co., Brooklyn.
John Meany, John Meany Co., Brooklyn.
Oscar Anderson, Berg Exterminating Co., Hartford, Conn.
Thomas J. Ledwith, Berg Exterminating Co., Hartford, Conn.
Lester A. Bureau, A.B.C. Exterminating Co., New Haven, Conn.
David A. Weisburger, B. & D. A. Weisburger, New York City.
Kenneth Tompkins, Tompkins Exterminating Co., New York City.
Mrs. Joseph Geisman, Sanitary Exterminating Co., Jersey City, N. J.
David McAlindin, Royal Exterminating Co., Hoboken, N. J.
Fred J. Bowers, Bowco Laboratories, Rahway, N. J.
Harry Rosenfeld, World-Wide Exterminating Co., Brooklyn.
Sidney Wimmer, Majestic Chem. & Exter. Co., New York City.
Mr. and Mrs. John K. Medoff, Hudson Exterminating Co., W. New York, N. J.
Mr. and Mrs. Harry Egner, Rose Exterminating Co., Philadelphia, Pa.
Miss Helena Whelan, R. J. Prentiss & Co., New York City.
D. L. McCullough, Sanitary Exterminating Co., Williamsport, Pa.
W. J. Boyce, Economy Exterminators, Hightstown, N. J.
John Norris, John Norris Co., Brooklyn.
E. N. Goldey, Bliss Exterminating Co., New York City.
Milton Masserman, Stone Exterminating Co., Bronx.
F. E. Bohman, Birchard System, Hartford, Conn.
Julius F. Gazzani, Jr., Vermin Exterminating Products, Passaic, N. J.
Harold Krauss, Abbay Exterminating Co., Newark, N. J.
Theodore Tarney, Tarney Exterminating Co., Orange, N. J.
David Cantor, Bell Exterminating Co., New York City.
Mary Hahon, Bell Exterminating Co., New York City.
Vera Pomerantz, Bell Exterminating Co., New York City.
F. L. Yannacone, Bell Exterminating Co., New York City.
Ted Schmerl, Deco, New York City.
John C. Ehrlich, J. C. Ehrlich Co., Reading, Penn.
E. H. Hirst, Pioneer Exterminating Co., New York City.
Dr. Arthur L. Brody, Pioneer Exterminating Co., New York City.
J. Richman, Acme Exterminating Co., Bronx.
E. Frank, Frankson Exterminating Co., Bronx.
R. Davenport, Davenport Pest Control, Brooklyn.
Mrs. E. Mendel, Arpco, New York City.
Mrs. Heydenreich, Freedom Pest Control Co., Woodside.
H. S. Bussell, Bussell Exterminating Co., Bronx.
Al Friedman, Friedman's Exterminating Service, Bronx.
M. A. Gladstone, Abbot-Madison Corp., New York City.
M. Levine, A & A Exterminating Co., Flushing.
Bernard Krinsky, A & B Exterminating Co., Brooklyn.
George Robinson, (Guest), New York City.
John K. Montgomery, Theodore Meyer, Est., Philadelphia.
Fred L. Oberlander, Bond Exterminating Co., Jamaica.
C. Hasselriis, Jr., Ratin Laboratories, Inc., New York City.
G. Frank, Frank Exterminating Service, Astoria, L. I.
Alex Feuerstein, Standard Exterminating Co., Long Island City.
William Dunn, X-L Exterminating Co., New York City.
Philip Haller, Virus Limited, Inc., New York City.
John Hauff, Zenith Pest Control, New York City.
M. A. McFarland, New York City.
Gaetano Borruso, Air-Way Exterminating Co., Middle Village, L. I.
Conrad Johnson, Innis, Speiden & Co., New York City.
Lothar Vogel, Atlantic Exter. & Fum. Co., Brooklyn.
William O. Buettner, Buettner Pest Control Co., Brooklyn.
Mrs. E. Hoffman, National Pest Control Association, Brooklyn.
Thomas H. Mahon, National Pest Control Association, Brooklyn.
Charles Pomerantz, Bell Exterminating Co., New York City.
Ernest M. Mills, U. S. Fish and Wildlife Service, New Brunswick, N. J.
S. Diner, American Pest Control, Bronx.
Max Rosenthal, Pests Magazine, New York City.

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Please note, however, that you must request each booklet on a separate letterhead though they may all be mailed in one envelope addressed to Pests, 126 Lexington Avenue, New York City, N. Y.

"SKUNKADORA" . . . DEODORANT

Most, if not all, PCOs have at one time or another wrestled with the problem of eliminating the odor of a dead rat wall-trapped. A simple method to eliminate such an odor, it is stated, is to use Skunkadora, application of which is easy. One merely, we are informed, unscrews the cuff of the electrical fixture nearest the spot where the odor is noted. This displays an iron box in which the wires are coiled. An open space between it and the plaster wall is left. By inserting the nozzle of the sprayer in this aperture, the Skunkadora can be forced behind the partitions and through the space where the dead rat lies. Since the spray will sink down and reach the body, as soon as it comes in contact all odor ceases. This action is active as long as any smell of decomposition persists, it is stated.

WRITE PESTS—SPARKILL.

ODORLESS DEODORANT—This all-purpose home and commercial deodorant, it is stated, kills odors by absorption, not by superimposing another odor. It is also stated to be non-toxic, non-poisonous, non-caustic, non-inflammable, non-corrosive and harmless to man, animals and birds. Effective in the elimination of offensive odors.

WRITE PESTS—X-ODOR.

NEW EDITION FUMIGATION MANUAL NOW AVAILABLE

The new edition of the Fumigation Manual pertaining to the use of Aero Brand HCN Discoids is now off the press. Every PCO should have one on hand as it is a ready reference and contains helpful and valuable information and suggestions.

WRITE PESTS—A-C MANUAL.

THE MODERN TREATMENT OF CYANIDE POISONING

This brochure, written by KK. Chen, M. D., Charles L. Rose, B.A., and G. H. A. Clowes, Sc.D., and reprinted from the Journal of the Indiana State Medical Association, discusses The Modern Treatment of Cyanide Poisoning. Contents include: Sources of Poisoning and Mortality Statistics; Diagnosis; The New Treatment; A Suggested Procedure for Actual Treatment; Results to Date, etc.

WRITE PESTS—A-C CYANIDE.

INSECT TRAPS

Bulletins describe traps for ants and roaches, with suggestions for their use.

WRITE PESTS—SOILICIDE.

RAT GLUE AND BOARDS CIRCULAR

RAT GLUE AND BOARDS CIRCULAR discusses use of rat glue boards as a means for effective rat control, etc.

WRITE PESTS—ELKAY.

PYRETHRUM - DERRIS - RED SQUILL PRODUCTS

Leaflet describes foregoing insecticides with special bait chart for use in connection with powdered red squill.

WRITE PESTS—PRENTISS.

CONTROL OF TERMITES-POWDER-POST (LYCTUS) BEETLES-DECAY

Circular discusses properties and uses of Permatox A in termite control and its application to soil and wood to control termites, decay control, powder-post beetle prevention and control. Description of Permatox T and its uses in termite control, as a soil poison, are also discussed, together with toxicity.

WRITE PESTS—BULLETIN 43-T.

VICTOR GLADIATOR METAL RAT TRAP

The Victor Gladiator Rat Trap is made of 22 Gauge Steel, Gun Metal finish. Equipped with strong double-coil spring made of 15 gauge oil tempered spring wire, heavy wire work throughout. Note holes in base for nailing to floor, rafters, or wall.

The Victor Gladiator has been designed especially for professional use by public health officers, sanitary officers of the armed forces, and pest control operators. It is of rugged construction and is particularly adapted to outdoor use; especially recommended for the tropics and on shipboard, not readily affected by continuous contact with moisture.

Actual size 7⅛x3⅝x½". Weight, packed 1 dozen, 4½ lbs. Weight, packed 6 dozen, 29½ lbs.

WRITE PESTS—VICTOR.

PRESERVATION OF MILLWORK AND OTHER DRY WOOD PRODUCTS

Bulletin discusses composition of Permatox B Concentrate and its application in the preservation of millwork and other dry wood products.

WRITE PESTS—PERMATOX 43-B.

RATS CAN'T RESIST THE NEW BAIT

VEGEX
DRY
GRAVY
as effective
as the best beef

Simply add water—boil up once—add poison—and it works like magic. Keeps indefinitely—needs no refrigeration. Safe to use.

One five-pound package makes five-gallon mixture—costs only four dollars. Four five-pound packages—fifteen dollars. Available in five-pound packages only.

VEGEX COMPANY
175 FIFTH AVENUE NEW YORK 10, N. Y.

Inquiries invited from pest control operators interested in New Big 6 Line of Wizo Moth Killer Vaporizers and Crystals. Catalog describing each product fully and prices available.
WRITE PESTS—ELKAY.

FILM OF VALUE TO PCO

Circular describes a vivid action film of greatest value to every PCO and opportunities it affords PCO to build good will and better public relations.
WRITE PESTS—WIL-KIL.

ANT BAIT

Circular describes a jelly ant bait with Thallium Sulphate as its toxic ingredient. Comes packed in sizes convenient for resale or professional use. Sample tube on request.
WRITE PESTS—LETHELIN.

Phosphorous Paste killing power; baits, combinations, amounts for the control of roaches, mice, rats are discussed.
WRITE PESTS—OPITZ.

FUMIGATION SAFETY RULE

A review of fumigation accidents of record for 1943 shows that oversight or disregard of rule to lock all doors and accessible windows, failure to place warning signs thereon and failure to post guard during fumigation account for approximately 20% of the accidents. Bulletin discusses ways and means to eliminate accidents of this nature.
WRITE PESTS—AC No. 80.

Fortified Red Squill circular, which includes bait chart, describes a Fortified Red Squill powder activated and standardized to meet recommendations of the Fish & Wildlife Service for a minimum lethal dose of 500/600 mg/kg of rat.
WRITE PESTS—PRENTISS.

SODIUM SILICO FLUORIDE

Bulletin describes sodium silico fluoride product with proper density. Effective manner of testing for presence of HCN after ventilation also discussed.
WRITE PESTS—AC 70.

Fumigation manual. 76-page manual describes safe handling and working with "Cyanegg" and on fumigation procedure and insect control. Illustrated.
WRITE PESTS—DuPONT.

GAS MASKS—RAT CONTROL PROGRAMS

Bulletin offers some pertinent suggestions regarding gas masks and how to keep them in perfect condition. It also discusses rat control programs and what the PCO can do to further them.
WRITE PESTS—AC 82.

NEW ANT TRAP

Manufacturer claims many new features such as no turning or twisting necessary; four openings; larger trap; contents ½ greater than any other competitive brand.
WRITE FOR YOUR FREE SAMPLE OF ANT TRAP TO NOTT, c/o PESTS.

Red Squill Rat and Mouse Killer

Booklet describes Red Squill rat and mouse killer made up in convenient package form for resale to public. Also illustrated are resale packages of dog repellent, moth killer, etc. Included in the booklet is reprint of an article on Red Squill by Leonard R. Parkinson, Agr. Exp. Station, Massachusetts State College.
WRITE PESTS—OHIO.

CALCIUM CYANIDE FOR RAT CONTROL

36-page booklet contains excerpts from official publications and reports of health officers throughout the world regarding use of calcium cyanide in the control of rats. The widely differing conditions surrounding infestations, and the specific types of control for each, which are described, will serve as suggestions to health officers and others in solving similar problems.
WRITE PESTS.

THE ACTIVATING EFECT OF PYRETHRUM UPON THE GERMAN COCKROACH

Research material prepared by John M. Hutzel, of the Ohio State University, Columbus, Ohio in cooperation with the Kenya Pyrethrum Extension Service, Inc., N. Y. Supervised by Professor F. L. Campbell.
WRITE PESTS—PYRETHRUM.

INSECT POISONING AGENTS

"Thanite, quick death to insects" is a 12-page booklet presented in Basic English with a view to international use. It discusses the development and applications of the product.
WRITE PESTS—HERCULES.

ELECTRIC FANS HAVE SEVERAL USEFUL FUNCTIONS IN FUMIGATION WORK

Ways in which fans may be used to promote circulation and penetration of gas during fumigation are described in this bulletin.
WRITE PESTS—AC 84.

BIRD REPELLENT

Circular describes product which manufacturer claims will serve as an effective repellent against pigeons, starlings, bats, dogs, cats, rats, mice, woodchucks, moles as well as crawling and flying insects that prey upon plantings and seedlings.
WRITE PESTS—PX.

BOX CAR FUMIGATION

Folder describes box car fumigation with methyl bromide, giving details as to: car seal, applicator arrangement, methyl bromide application, dosage, exposure period, temperature, aeration, precautions.
WRITE PESTS—DOW.

PRESERVATION OF LUMBER, POLES, POSTS, PLYWOOD WITH PENTACHLORPHENOL

This bulletin gives a brief summary of the properties, use to date, and recommendations for the preservative treatment of lumber, poles, posts, and other forest products with Permatox A. This product, it is stated, has shown outstanding promise as an effective and permanent oil preservative for many wood products. Set forth briefly also, are recommendations for the effective preservative treatment of lumber, poles, posts, and other forest products with Permatox A, based upon experience to date.
WRITE PESTS—BULLETIN 43-A.

PIGEON-PROOFING

Folder describes pigeon-proofing invention which manufacturer claims will completely and decisively eliminate the pigeon nuisance. In use by real estate companies, churches, government buildings, etc.
WRITE PESTS—STANLEY.

FIRST AID AND TREATMENT FOR METHYL BROMIDE EXPOSURE

This valuable booklet, prepared by Dr. H. H. Gay, Medical Director, The Dow Chemical Company, Midland, Mich., outlines first aid and treatment for Methyl Bromide exposures. Contents are based upon what is believed to be sound medical practice. Digest follows: properties of Methyl Bromide, symptoms of Methyl Bromide exposure, first aid, suggested treatment by a physician, skin contacts with Methyl Bromide. Copy may be had by writing Dow direct. or
WRITE PESTS—GAY.

SAFETY IN FUMIGATION WORK

Fumigation Safety Rule No. 1; namely, "Vacate entire building even though only part is fumigated, as well as adjoining buildings into which gas may penetrate" is discussed in this bulletin.
WRITE PESTS—AC No. 78.

ALL-PLASTIC GOGGLE

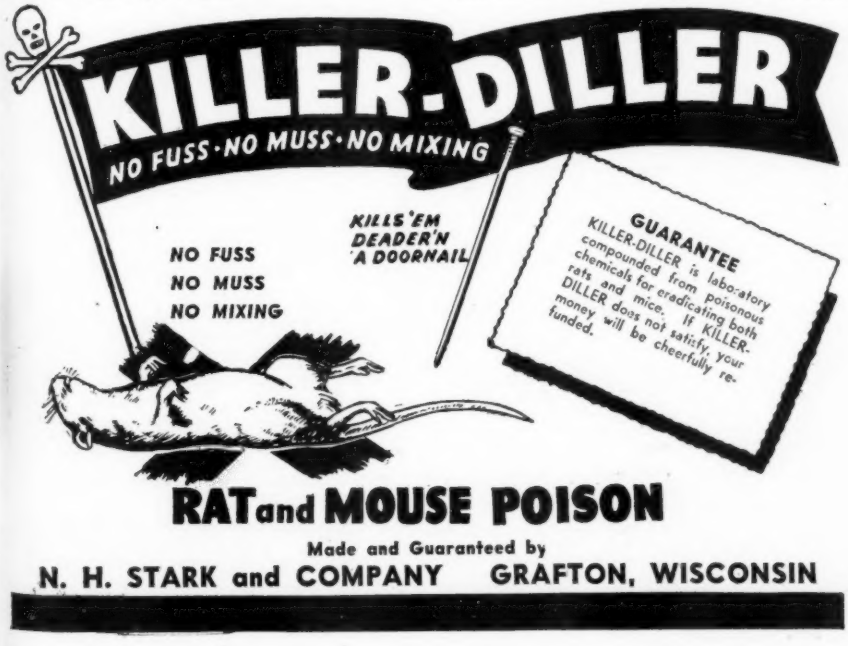
Circular describes a new lightweight, all-plastic goggle which provides comfortable, durable protection for the eyes. The individual eye cups are moulded to fit the facial contours, giving a close yet comfortable seal around eye orbits, according to the circular. Particularly useful for spraying in termite control, as well as heavier bedbug spraying operations, to prevent direct sprays from getting into the eyes themselves—available in different models.
WRITE PESTS—MINE.

FUMIGATION AND PLASTICS

News release discusses use co-ordination of such diverse chemical products as plastics and fumigants in connection with infested bagged grain, seed, packaged or boxed foodstuffs. Methyl bromide-plastic-tarpaulin method of disinfestation described.
WRITE PESTS—DOW.

RESPONSE OF RATS MAINTAINED ON DIETS FUMIGATED WITH METHYL BROMIDE

Research material reprinted from Food Research
WRITE PESTS—DOW-RESEARCH.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KILLS 'EM DEADER'N A DOORNAIL
NO FUSS
NO MUSS
NO MIXING
GUARANTEE
KILLER-DILLER is laboratory compounded from poisonous chemicals for eradicating both rats and mice. If KILLER-DILLER does not satisfy, your money will be cheerfully refunded.

RAT and MOUSE POISON

Made and Guaranteed by

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Business Opportunities
(Classified)

RATES — For individuals seeking employment, 5c per word, minimum $1.00. All others 10c per word, minimum, $2.00. All advertisements must be in the hands of the publishers seven days before publication date and must be accompanied by cash or money order for payment in full. The publishers are not responsible for any false or misleading advertisements.

Replies to advertisements where box number only is indicated should be addressed c/o PESTS, 1200 Oak St., Kansas City 6, Mo., giving box number as well.

FOR SALE—Fumigation and Extermination business established 6 years, going business, in town of 25,000 pop. in southern Wisconsin, must sell on account of poor health. For further information write Box 31, Pests.

FOR SALE

DuPont Cyanide Generator, capacity 25 lbs. Sodium Cyanide. Excellent condition. Send offer to Box 22, Pests.

MANAGER, SALESMAN, thorough knowledge exterminating, fumigating, termite control business. Manage Connecticut and New York territories for large, reputable firm. $4,000 per year, plus percentage of business. Steady income assured. Write full qualifications, experience, age. All letters held in strictest confidence. BOX 389.

FUMIGATION SAFETY RULE

Bulletin discusses importance of personal inspection of entire premises immediately before releasing gas, and offers some constructive suggestions with respect thereto.

WRITE PESTS—AC 81.

STERILIZING GAS MASKS

News bulletin describes a chemical that is claimed by the manufacturer to be effective in sterilization of gas masks. Bulletin also discusses antidotes and first aid, particularly an inhalant which functions best as an antidote to HCN poisoning, and where obtainable.

WRITE PESTS—AC-73.

FUMIGATION SAFETY SUGGESTIONS

Of timely interest, in view of the at-hand fumigation season, is this bulletin which advocates as a safety measure the use of methyl orange-mercuric chloride test papers for the presence of HCN. It also discusses can openers for Zyklon Discoids, the need for adequate ventilation after fumigations, and gives a cautionary note on pilot lights in premises to be fumigated.

WRITE PESTS—AMERICAN.

TERMITE CONTROL

Folder discusses concentrates available for two distinct methods of termite control: (1) treatment of timbers in place with an oil solution, and (2) treatment of all soil around an infested building or area with either an oil or water soluble chemical. Issuing company states it specializes in all problems concerning wood-destroying organisms and also wood preservation and invites your inquiries thereto.

WRITE PESTS—WOOD.

MILITARY FUMIGATION MANUAL

This special 48-page manual has been prepared for the benefit of officers and civilians in the Armed Forces who are responsible for vermin control, and for PCOs who may contract with the Armed Forces for fumigating work. Among other subjects, the manual discusses: dosage, preparation of building for fumigation, fumigation operation, common pests, cockroach control; precautions, first aid methods, etc.

WRITE PESTS—AC.

SYNTHETIC ROACH POWDERS

Research material apropos thiocyanates in powdered form for roach control in place of pyrethrum—describes the development and properties of roach, ant and bedbug powder based on Lethane A-70.

WRITE PESTS—SYNTHETIC.

SPECIAL ROACH POWDER

Circular describes a roach powder (containing Lethane A 70) which, it is stated, is fast acting, positive in kill and will not deteriorate for at least eight weeks after application. As a result, the supplier points out, the PCO does not have to service his customers as often, thereby conserving manpower. Moreover, it is stated, the powder is non-toxic to warm-blooded animals and may, therefore, be used in dairies, packing and food handling plants, homes, etc., in fact, in all places where sodium fluoride mixtures may not be used. . . . Described also is a sodium fluoride-Pyrane formulation for the PCO who wishes to make his own roach powder.

WRITE PESTS—BOSLEY.

LETHANE A-70

Folder discusses roach, ant and bedbug powders based on this new insecticide concentrate. Described are: safety factors, cost per application, killing power, performance data, residual activity, tenacity, etc.

WRITE PESTS—A-70.

SOLVAY PRODUCTS

48-page booklet in colors and illustrated, covering their entire line of Alkalies and Special Products, with a special section dealing with Para-Dichlorobenzene and Ortho-Dichlorobenzene.

FREE COPY MAY BE HAD BY PEST CONTROL OPERATORS.

WRITE PESTS—SOLVAY, c/o PESTS.

NEW RAT BAIT

The current difficulty of procuring rat baits because of meat rationing has been overcome by the discovery on the part of numerous PCO's of Vegex Dry Gravy, states its manufacturer.

This product with a delicious meat flavor, and high in hydrolized vegetable protein seems to be an irresistable lure for rats, according to the same source.

It has many advantages. It is instantly prepared by simply adding water and boiling up once.

The prepared bait can be handily carried in the kit, and the bait need never be touched, as bread can be dipped in the poison mixture by tongs. Keeps indefinitely and needs no refrigeration, it is stated.

Results with Vegex Dry Gravy have been so good in rodenticide work, and the Gravy is so inexpensive and easily handled that PCO's who have used it are expecting, according to the supplier, to continue even after war rationing is a thing of the past.

The Vegex Company, located at 175 Fifth Avenue, New York 10, N. Y., puts up this Dry Gravy in 5-pound packages only. One 5-pound package makes 5 gallons of finished Gravy. Prices and other pertinent data on Vegex Rat Bait may be had by writing the company.

DEODORANT

Catalog includes price data, etc., on deodorant which it is felt can neutralize and deodorize such toxic agents as Thanite, Lethane 384 Special, Velsicol, etc. Also contains data on perfume oils for sprays made with pyrethrum and kerosene.

WRITE PESTS—MAGNUS.

METHYL BROMIDE

What it is; what it does; how to use it—all these questions apropos methyl bromide are covered in an instructive and informative brochure. Described are dosage schedule for various type pests, methods of application and preliminary precautionary measures.

WRITE PESTS—Westvaco.

ALABAMA OPERATES STATE-WIDE RAT CONTROL PROGRAM TO STOP SPREAD OF TYPHUS FEVER

An article written by Dr. Andrew J. Perolio, State Director of Typhus Control of the State of Alabama which describes the State's program for stopping the spread of typhus fever.

WRITE PESTS—AC.

Hydrocyanic Acid Poisoning—Skin Absorption

Bulletin discusses some pertinent safety suggestions with respect to avoidance of hydrocyanic acid poisoning through skin absorption.

WRITE PESTS—A-C-74.

CONTINUOUS INTIMATE BLENDING

A bulletin on the intimate blending of fine chemical, food and insecticide powders has recently been issued by Sprout, Waldron & Company, Manufacturing Engineers. In addition to a description of Blending Systems designed for continuous, automatic operation, there is a page of photographs which show the difference between intimate blending and conventional mixing as revealed by typical spatula tests. Copies of this 8-page bulletin in two colors may be obtained from PESTS—SPROUT.

REMOVAL OF PHOTOGRAPHIC FILMS AND PAPERS BEFORE FUMIGATION

is the title of an interesting and informative Bulletin which discusses the effects of hydrocyanic acid vapors upon unexposed photographic film. Other subjects discussed are: "High Temperature Necessary for Winter Fumigation"; "The Rat Menace—An Opportunity to Cooperate."

WRITE PESTS—A-C-88.

INSECT COLLECTIONS

Booklet describes pocket display case which may slip easily into a coat pocket making it of value for salesmen or others who travel about. Life history collections of structural type pests are also available for the PCO.

WRITE PESTS—WARD'S.

EFFECT OF HYDROCYANIC ACID ON FOODSTUFFS

This bulletin answers some highly interesting questions as to the effect of HCN on footstuffs.

WRITE PESTS—A-C 89.

THALLIUM PRODUCTS

Circular calls attention to ant traps and jelly bait for control of ants—house or garden; mice seeds, rat paste, etc.

WRITE PESTS—NOTT.

RESPIRATOR

Bulletin discusses "Clear-Vue" model Dustfoe Respirator, which it is stated is durable, odorless, noncorrosive and a non-conductor of electricity and heat and gives a proved protection against toxic dusts.

WRITE PESTS—DUSTFOE.

HYDROCYANIC GAS MASK

Bulletin describes Hydrocyanic gas mask with all-vision facepiece.

WRITE PESTS—MINE.

NEW PERFUMING PRINCIPLE FOR INSECT SPRAY TOXIC AGENTS

Perfume Oil Fruit Berry MM&R is called the first new and different neutralizer-perfume in a decade, by Magnus, Mabee & Reynard, Inc., New York essential oil house.

Perfume Oil Fruit Berry MM&R not only neutralizes the odor of toxic agents, but imparts a truly refreshing fragrance of uncommonly light character. It has a definite fruity scent. A remarkable feature is that it has so light a fragrance, yet has the hiding power to give lasting coverage of heavy odors. This feature will be of particular interest for sprays used in food plants, bakeries, etc.

Fragrance of sprays, up to now one of the unmentionables of insect toxicants, now becomes an asset instead of a liability. Samples may be had by writing PESTS—MABEE.

ELECTRIC FANS

Bulletin discusses value of electric fans in connection with fumigation work, also some pertinent thoughts on the Schafer Prone Pressure Method of Resuscitation, etc.

WRITE PESTS—AC-69.

Advantage of low dosage fumigation at frequent intervals—warehouses and factories—is discussed in this bulletin. Inadvisability of fumigating cold houses also reviewed.

WRITE PESTS—AC-90.

ANIMAL ODORS AS REPELLENTS AND ATTRACTANTS

Incorporation of the glandular extraction of the skunk into commercial repellents to add to their potency and efficacy is discussed in an interesting article, entitled "The Odor of an Enemy, the Cat, Frightens Mice Away," by Charles V. Sparhawk. In it he also discusses the use of a small quantity of a muskrat bait in the form of a gland as a powerful attraction to any creature that feeds on meat, such as mosquitoes, flies, ticks, lice, rats and mice, etc.

WRITE PESTS—SPARHAWK.

NH DUST

Leaflet describes new organic insecticide compound which, it is stated, may be used where non-poisonous insecticides are mandatory. Effective against roaches, silverfish, ants, fleas, lice and many other common pests found in the home, industrial and food storage plants.

WRITE PESTS—POWELL.

FUMIGATION SAFETY RULES

Bulletin discusses fumigation safety rules with respect to mattresses, pillows, bedding, clothing and bedroom rugs, etc.

WRITE PESTS—AC No. 79.

STANLEY'S PATENTED PIGEON-PROOFING

Economically, Permanently, Positively and **Lawfully** from any type of structure.

Stanley's Roofing & Building Service, Inc.

523 West 184th St. New York, N. Y.

Telephone: WAdsworth 7-3300-1

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RAT GLUE BOARDS

Eliminate Use of Poison!

Require No Bait!

A practical and economical way to rid buildings of rodent pests! No hazards of poisoned bait . . . or of decomposition! Easy to prepare! Just place WIZO Rat Boards near rat hole or form a runway next to walls. Fasten boards to floor to prevent pulling away. Rodents are caught firmly the moment they step on the boards.

WIZO RAT GLUE can be obtained in quantities for preparing your own boards. Write for complete particulars.

ELKAY PRODUCTS CO.

323-27 West 16th St. New York, N. Y.

Case History*

RETAIL GROCERY AND MEAT MARKET FUMIGATION

Dow Methyl Bromide Conquers Cockroaches

A midwest operator was faced with the job of exterminating cockroaches from a retail grocery and meat market. Familiar with the difficulty of fumigating perishable foods, he wisely relied on Dow Methyl Bromide. Factual evidence that this penetrating fumigant is completely effective yet harmless to food products when properly applied is presented by his experience:

Building: Two stories, 50,000 cubic feet. Frame with stone basement. Concrete floor. Living quarters above store, food storage in basement.

Preparation: Building sealed with asbestos calcium chloride water mix, masking tape, and oiled kraft paper. Living quarters, adjoining store and apartment above it vacated and guards posted.

Materials Removed: Iodized salt. (Fresh produce closed out for week-end.)

Dosage and Exposure Period: One pound Methyl Bromide per 1,000 cubic feet for 24 hours during week-end period when store was closed.

Method of Application: Methyl Bromide released from cylinders and circulated by fans for sufficient time to prevent stratification.

Aeration Period: Two hours with fans operating.

Results: No signs of life revealed by careful examination. No damage to either groceries or meats.

Why not find out how Methyl Bromide can help *you* handle problems too tough for ordinary fumigants?

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Detroit • Chicago • St. Louis
Houston • San Francisco • Los Angeles • Seattle

*Actual record is on file at The Dow Chemical Company

The penetrating fumigant

Methyl Bromide

DOW

CHEMICALS INDISPENSABLE TO INDUSTRY AND VICTORY

PLAN TO REPEL THAT SPRING INVASION NOW!

An invading army is converging on all objectives. The attack may be expected at any moment. All resources for defense must be massed against the enemy. Plans must be made AT ONCE to repel this certain invasion.

Check your stocks of HI-TOX, MORTICIDE, SUPER-MORTICIDE, MORTOLIN, ASSCO ROACH POWDER and POWDERED FORTIFIED RED SQUILLS. You will avoid disappointment and consequent operational loss by ordering your SPRING requirements NOW!—You should have at least a sixty day supply of all our products on hand at all times to protect yourself against transportation delays.

If you are still unacquainted with our products, write our office nearest you for samples and data.

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